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RELATIONSHIP BETWEEN TRANSIENCY AND TEST ACHIEVEMENT  
OF GRADE SIX STUDENTS

BY

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A THESIS

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UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Relationship Between Transiency and Test Achievement of Grade Six Students," submitted by Sister Mary Annata Brockman in partial fulfilment of the requirements for the degree of Master of Education.

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## ABSTRACT

The purpose of this study was to ascertain the nature and magnitude of the relationship between transiency and student test achievement.

The study, which was carried out in the Edmonton R.C. Separate School System, included the 1,341 June, 1964 grade six students.

The Otis Self-Administering Tests of Mental Ability, Intermediate - Form A scores, the Edmonton Separate School Elementary Standardized Test Scores, and the Gates Reading Survey - Form 2 scores, required for the study, were obtained from the Separate School Board office files. The transiency data, occupation of the father, and other pertinent information were obtained by means of questionnaires which were explained to the students and were completed or checked for validity of information by the parents. All questionnaires were satisfactorily completed and returned. The information was then coded and punched on IBM cards for the computer processing of the data.

An analysis of Covariance and Multiple Linear Regression were used to determine significant differences in achievement test results.

The findings of the study were as follows:

1. The achievement of transient girls is significantly





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lower in arithmetic, language, and science than that of the non-transient girls.

2. Transiency has a significantly greater effect on the achievement of girls than on that of boys.

3. Girls who have transferred once are hindered in achievement as much as those who have had several transfers.

4. Transiency does not seem to affect the achievement of boys in any subject other than language until after the third transfer.

5. Transfers within the school system have the same effect on student achievement as transfers from other school systems either within or outside the province of Alberta.

6. Transiency affects the achievement of the gifted students as it affects those of other levels of intelligence; in fact, the gifted students appear to be under-achieving.

7. Summer transfers are better predictors of student achievement than term transfers or a combination of both. Girls, in particular, who transfer during the summer achieve significantly better than those who transfer at any other time of the school year.

This study has indicated that girls in particular are significantly hindered in achievement due to transiency. It also seems to indicate that standardization of the core curriculum would not be the panacea for all transiency problems since transfers from other school districts, provinces,



or countries have the same effect on student achievement as transfers within the same school district. This may be due to the teacher variable resulting in as much curriculum variation within as between systems.

Further research is needed to determine the factors which prevent transient students from maximum achievement. Perhaps teachers and administrators could take more immediate action in trying to pinpoint the problems of the individual child, to fill the gaps due to curriculum variation, and to rehabilitate him in his new environment.



## ACKNOWLEDGMENTS

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## CHAPTER I

### SIGNIFICANCE OF THE PROBLEM AND PURPOSE OF THE STUDY

Educational administration has as its central purpose the enhancement of teaching and learning. To accomplish this objective as perfectly as possible, administrators must be highly sensitive to anything which significantly influences the achievement of students.

In the past few years especially, research has afforded experimental evidence on many aspects of teaching and learning and, as a result, achievement has been augmented by the advancement of factors favorable to increased productivity, or the alleviation or removal of obstacles to satisfactory achievement.

Knowledge of the nature and magnitude of the relationship between transiency and test achievement, hitherto uninvestigated in Canadian elementary schools, may furnish further insight into the teaching-learning situation and thereby increase the means of facilitating the maximum realization of the potential of every individual student. It was with the hope of providing this knowledge that the present study was carried out.





## I. SIGNIFICANCE OF THE PROBLEM

Transient students have been such a problem in some parts of North America that the Association for Supervision and Curriculum Development of the National Education Association called "pupil migration" one of the most serious detriments to progress in schools today.<sup>1</sup> In the United States alone, according to the 1959 Bureau of the Census, over 7½ million children of school age were on the move. For most of them it was their first transiency, but some pupils had moved as many as ten or twelve times. Each move meant adjusting to a new school situation, and a special problem was created for the teacher if the transfer came after the beginning of the term. The situation became so complicated that a number of special programs were developed in such places as California, the State of Colorado, Palm Beach County, Florida, and Northampton County, Virginia to help transient school-age children.

That migration is a vital problem in the United States is made clear by Cohen in the conclusion of his article on migrant youth in which he states:

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<sup>1</sup>Eli E. Cohen, "The Education of Migrant Youth," The Bulletin of the National Association of Secondary-School Principals, XLIII (April, 1959), pp. 84-85.





The size and complexity of the problem, therefore, demand high priority - not only from teachers, but also from school administrators, and the community.<sup>2</sup>

Although at the present time the problem of transiency appears to be less serious in Canada than in the United States, statistics show that Canadians, too, are on the move. The Testing and Research Office of the Department of Education<sup>3</sup> revealed the total number of students reported as transferring in Alberta schools to be 27,236 in the year 1962-63. During the same year the total number of children moving from one province to another through the country was estimated, from Family Allowance statistics,<sup>4</sup> to be 120,672.

The increasing number of transfers, particularly inter-provincial transfers, has warranted the attention of The Canadian Home and School and Parent-Teacher Federation, the Canadian Education Association, and other educational organizations. Due to the scarcity of research relating to the achievement of transient students, educators sometimes act on probability rather than on direct evidence. Consequently, in

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<sup>2</sup>Ibid., p. 85.

<sup>3</sup>Coordinator of Testing and Research, "A Study of Alberta School Pupils who Transferred During the Period from July 1, 1962 to June 30, 1963" (Department of Education, Edmonton, Alberta, 1963), p. 1. (Mimeographed.)

<sup>4</sup>Research and Information Division, "Interprovincial Transfers - The Magnitude of the Problem," Information Bulletin (Toronto: Canadian Education Association, 1965), pp. 2; 14-15.



the study carried out by the Testing and Research Office of the Department of Education, only those students who had come from "another school system" were listed as transient students. The reason given for this distinction was that, "while transfers within a system might be disturbing to a student, it was felt that a much more serious disruption occurs when a change of system is involved." <sup>5</sup>

Similarly, due to lack of specific research relating to the achievement of students who have intersystem transfers as compared with those who have interprovincial transfers, the Canadian Home and School and Parent-Teacher Federation favor the standardization of the core curriculum for schools across Canada since it was the consensus of the parents that children had serious difficulty in adjusting to the difference in curriculum from province to province. <sup>6</sup>

Perhaps this study will provide useful information to parents contemplating a change of residence, or to teachers and administrators by thus assisting them to act ever more competently and confidently, in their endeavor to provide the best possible teaching-learning experience, through knowledge of the relationship between transiency and achievement.

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<sup>5</sup>Coordinator, op. cit., p. 2.

<sup>6</sup>Research and Evaluation Committee, "The Survey as Regards the Core Curriculum for Canada," The Canadian Home and School and Parent-Teacher Federation (Toronto: National Office Incorporated, 1962), pp. 1-4.





## II. PURPOSE OF THE STUDY

The objectives of this investigation were:

1. To determine the nature and magnitude of the relationship between the achievement of transient and non-transient girls.
2. To determine the nature and magnitude of the relationship between the achievement of transient and non-transient boys.
3. To compare the effect of transiency on girls with the effect of transiency on boys.
4. To ascertain the differences, if any, in achievement among girls who have one, two, three, four, five or more transfers.
5. To ascertain the differences, if any, in achievement among boys who have one, two, three, four, five or more transfers.
6. To compare the achievement of girls who have one, two, three, four, five, or more transfers with that of the corresponding achievement of boys.
7. To determine the difference, if any, in the achievement of transient students according to the following categories: (1) transfers from one school to another within the Edmonton R. C. Separate School System, (2) transfers to the system from within the province of Alberta, and (3) transfers to the system from outside the province of Alberta.



8. To compare the effect of transiency on the achievement of students according to the following levels of intelligence: (1) Otis score of 130 or more, (2) Otis score of 110-129, and (3) Otis score of 90-109 or less.

9. To determine the difference, if any, in the achievement of students who have the following: (1) term transfers only, (2) summer transfers only, and (3) both term and summer transfers.

In other words, the purpose of this study is to determine whether transiency significantly affects student achievement, to determine whether the achievement of transient students is affected to a greater or lesser degree according to sex, the number of transiencies, the locality from which the students transfer, the level of intelligence, or the time in which the transfer occurs.





## CHAPTER II

### REVIEW OF RELATED LITERATURE

From time to time during the past thirty-five years research work has been done particularly in the United States and, to a smaller extent, in the United Kingdom relating to the achievement of transient students. The first such research in Canada was carried out in 1956 by Verner Richard Nyberg.<sup>7</sup>

The results of studies carried out in the United Kingdom with gypsy, circus, or canal boat children are local in nature and, therefore, would not necessarily apply to Alberta schools. Similarly, some of the studies carried out in the United States dealt with the children of migrant parents, particularly those of occupational or seasonal migrants. The impact that group migration would have on a particular school or school system could not be compared with the impact made by incoming transient students fairly dispersed throughout the school year. The latter would more nearly reflect the situation in Alberta schools.<sup>8</sup> Consequently, only a brief review of these studies, emphasizing related aspects of the present study, will be presented in this chapter. Nyberg's

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<sup>7</sup>Verner R. Nyberg, "A Study to Determine the Effect of Transiency on Grade Nine Departmental Examinations Marks" (unpublished Master's thesis, The University of Alberta, Edmonton, 1956).

<sup>8</sup>Research and Information Division, "Interprovincial Transfers - The Magnitude of the Problem," op. cit., p. 2.



research, which was carried out in Alberta, and other Canadian research will then be reviewed in greater detail.

# I. NON-CANADIAN STUDIES

In the cases reviewed by Helen Huus<sup>9</sup> there are indications of differing opinions concerning transient students. Seagoe<sup>10</sup> ascertained non-migrants superior in total school achievement. The study of Sackett,<sup>11</sup> on the other hand, indicated that the transient children were the superior group in all subjects except in arithmetic computation. It is to be noted, however, that the intelligence of the grade seven and eight pupils in the Panama Canal Zone, where the study of Sackett had been carried on, was decidedly above the average; therefore, the results would not necessarily be valid for general application. The study of Muntz<sup>12</sup> indicated that non-migrants were better in some grades, but poorer in others.

In her own research on the reading achievement of migratory children Huus noted that, although there was some

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<sup>9</sup>Helen Huss, "Factors Associated with the Reading Achievement of Children from a Migratory Population," The Elementary School Journal, December, 1944, and January, 1945, pp. 203-212 and pp. 276-285, respectively.

<sup>10</sup>M. V. Seagoe, "The Transient Child," Journal of Juvenile Research, XVI (July, 1932), pp. 251-257.

<sup>11</sup>E. B. Sackett, "The Effect of Moving on the Educational Status of Children," Elementary School Journal, XXXV (March, 1935), pp. 517-526.

<sup>12</sup>"Transiency and its Relation to the Progress of Pupils" (unpublished Master's thesis, University of Arizona, 1937). cited by Huus, loc. cit.





evidence of poor adjustment, the same factors affected the reading achievement of both migrant and non-migrant groups.

According to the findings of Bollenbacher,<sup>13</sup> achievement in reading and arithmetic as measured by standardized tests was not affected by the mobility of that particular grade six group. In reference to the results, she states:

Needless to say, these findings surprised the teachers and contradicted the opinions held by many that the reading achievement of pupils who move frequently will be lower than the achievement of similar pupils who have not moved.<sup>14</sup>

Pertaining to the effect of a number of transiencies on achievement, a study by Tetreau and Fuller<sup>15</sup> indicated that the average number of moves each year had no bearing on reading achievement.

A further problem investigated in the same research, and relevant to this study, was the problem of the difference in school achievement between children who were classified according to the different occupational groupings of the father. According to the results of the study, the children whose fathers were "white-collar" workers; that is, professional workers, proprietors and managers, and clerks, had

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<sup>13</sup>Joan Bollenbacher, "A Study of the Effect of Mobility on Reading Achievement," The Reading Teacher, XV (March, 1962), pp. 356-360.

<sup>14</sup>Ibid., p. 360.

<sup>15</sup>Varden Fuller, and E. D. Tetreau, "Some Factors Associated with the School Achievement of Children in Migrant Families," Elementary School Journal, XLII (February, 1942), pp. 423-431.



reached the standard grade or higher in larger proportions than the children from families in other occupational classifications. Children of skilled laborers were much lower. Last, and lowest by a great deal, were the children of farm laborers.

The findings of two studies in connection with parental occupation and mental ability are noteworthy. In the research reviewed by Munzer<sup>16</sup> concerning the five-year study of 100,000 high school seniors of Wisconsin, undertaken by Byrns and Henmon,<sup>17</sup> it was reported that median ability differs from one occupational group to another, but that there is great overlapping. Differences within groups are greater than differences between groups. They also report a low correlation (.18) between parent occupation and mental ability.

McGehee and Lewis<sup>18</sup> likewise stress the fact that superior and retarded children are found at all occupational levels. They conclude, "This study has indicated that a

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<sup>16</sup>Jean Howard Munzer, "A Study of the Relationships Between Mobility and Academic Achievement of Third-Grade and Sixth-Grade Children," (unpublished Master's Thesis, The University of Michigan, 1961).

<sup>17</sup>"Parental Occupation and Mental Ability," cited by Jean Howard Munzer, ibid., p. 25.

<sup>18</sup>"Socio-economic Status of Homes of Mentally Superior and Retarded Children and the Occupational Rank of Their Parents," cited by Munzer, ibid., p. 24.





knowledge of the parent's occupation or the socio-economic condition of the home of the child is a very precarious index of the child's intelligence."

Among problems Munzer investigated in his study were the following: (1) mobility on state, system, and school levels, (2) sex, (3) intelligence of the child, and (4) occupation of the father.

The results pertinent to this investigation were:

1. Grade Six children in the Wayne schools who had experienced low mobility had, as a group, a higher measure of academic achievement than children of high mobility.

2. The results on the total group indicated significant, but very low, negative relationships of school mobility and system mobility with academic achievement.

3. In the boys' group of 407, no mobility measures correlated significantly with academic achievement; however, in the girls' group of 358, school and system mobility were significantly correlated negatively with academic achievement.

4. None of the correlations of father occupation with academic achievement was significant; all were low.

Several studies dealing with rural migration to urban settings were completed in the United States between 1940 and 1960. Blaine E. Mercer<sup>19</sup> summarized the more notable findings of these studies, a few of which are given below.

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<sup>19</sup>B. E. Mercer, "Rural Migration to Urban Settings: Educational and Welfare Problems," The Social Studies, LV (February, 1964), pp. 59-66.



1. Rural migrants were less well-educated; there were very few college graduates among them.

2. Newcomers initially participated less in social functions than the natives did.

3. Migrants from farm backgrounds participated less than those from urban backgrounds.

4. Some migrants appear to adapt to their new setting with far greater ease than others.

5. Given time to learn, the rural migrant does adapt to his new setting.

Much of the literature reviewed in the preceding pages was the result of research carried out more than twenty years ago. Undoubtedly "history repeats itself", but surely the results of these studies do not necessarily pertain to our day nor to our province of Alberta.

## II. CANADIAN RESEARCH

The review of the literature finds comparatively little on the subject of transiency, relating to its effect on student achievement, by Canadian authors. It would seem, then, that this is not a problem worthy of note in Canada; nevertheless, very few teachers in our country would agree that no transiency problems exist in our schools.

The purpose of Nyberg's investigation was "to determine the effect of transiency on the marks received by grade IX





pupils in Alberta on the Departmental Examinations of June, 1953. . . . to determine whether the changes resulting from transiency, such as (1) becoming adapted to a new school situation, (2) becoming adapted to a new home life, and (3) coming into contact with a new social group, will enhance pupil achievement in grade IX, have a detrimental effect, or have no effect upon it."<sup>20</sup>

To accomplish this objective, a group of transient pupils was matched as closely as possible with a group of non-transient pupils for sex, age, mental ability, attendance, and type of school attended during the greater part of the year in which the study was carried out. The subject marks received by the pupils in the Grade IX, 1953 June examinations were obtained from the records of the Department of Education, while the other pertinent facts were obtained by the questionnaire method.

The results of Nyberg's research did not reveal a significant relationship between transiency and performance in any subject other than social studies, and he stated:

It might be noted at this point that in all subjects containing an organized body of knowledge, the differences, however small, between the transient

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<sup>20</sup>Verner R. Nyberg, "A Study to Determine the Effect of Transiency on Grade Nine Departmental Examinations Marks," The Alberta Journal of Educational Research, II (September, 1956), pp. 151-152.





and non-transient pupils are in favor of the latter. This might indicate a trend which could be verified only by further study.<sup>21</sup>

Nyberg concluded with the generalization that although grade nine pupils in Alberta lose in some fields by moving from one school to another during the term, the lowering of the marks, even in social studies, is not sufficient to cause alarm, and that there is even a possibility that transiency benefits a pupil in reading and literature.

In spite of this general inference, Nyberg pointed out the limitations of his study; namely, that it was limited to the grade nine class of 1952-53 excluding cases from ungraded schools, transients from other provinces, retarded and accelerated pupils. It was not possible to separate sex, which might have influenced the results of the investigation, because of the small number of matched pairs of transient and non-transient pupils that could be established. The fact that differences do sometimes occur in achievement according to sex is verified by Pritchard<sup>22</sup> in regard to differences in arithmetic where urban boys had significantly better mean scores than the girls in that sample.

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<sup>21</sup>Ibid., p. 155.

<sup>22</sup>Ralph O. Pritchard, "A Survey of the Arithmetical Achievement of Grade Five Pupils in Alberta Schools," The Alberta Journal of Educational Research, II (March, 1956), p. 46.



In view of these and other limitations, Nyberg concluded, "There is no valid reason for assuming that the findings of this investigation can be applied to the pupils of any other grade."<sup>23</sup>

Other research done in Canada on transient students in connection with this investigation is that which was carried out by the Testing and Research Office of the Department of Education in the year 1962-63. Although it did not deal with the relationship of transiency to that of achievement, it did furnish evidence of the fact that the greatest number of transfers occurs in the lower grades.<sup>24</sup> This observation was also significantly manifested in the report of Calmar S.D. 459<sup>25</sup> which covered the four-year period from September, 1949 to September, 1953. Since, according to these sources, the greatest number of transfers in Canada are in the lower grades, this study will investigate the achievement of students who have transferred any time from grade one to grade six inclusive. This aspect of the study is in harmony with one of Nyberg's recommendations; namely, that further study be carried out to determine the effect of several transfers over a period of years since the long-term effect of transiency might be different from the immediate effect which was the object of his study.<sup>26</sup>

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<sup>23</sup>Nyberg, op. cit., p. 39.

<sup>24</sup>Coordinator, op. cit., p. 1.

<sup>25</sup>Nyberg, op. cit., p. 1.      <sup>26</sup>Ibid., p. 40.





Two other suggestions for further study given by Nyberg, and which will be included in this research, are the following: (1) a comparison of the effect of transiency on boys with the effect on girls, and (2) the effect on the slow learner, the average, and the bright pupil.

No literature was found that indicated research was carried out relating to the comparison of achievement between students who had term transfers only, summer transfers only, or a combination of term and summer transfers; however, in the Information Bulletin dealing with "Interprovincial Transfers," we read:

Pupils who transfer between school years should have an advantage over those who have to transfer during the school year. Put the other way around, the fewer transfers there are during the school year, the smaller the transfer problem is likely to be.<sup>27</sup>

An attempt will be made in the present study to determine the difference, if any, in the achievement of students who have had term transfers only, summer transfers only, or a combination of both.

The Canadian Home and School and Parent-Teacher Federation directed the Research and Evaluation Committee, as a result of a resolution adopted at its 1961 Annual meeting, to undertake a survey to ascertain whether differences in curricula of the provinces constituted a serious problem for students who moved from one province to another.

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<sup>27</sup>Research and Information Division, "Interprovincial Transfers - The Magnitude of the Problem," op. cit., p. 9.



By means of random selection, every tenth association of the Canadian Home and School was requested to provide certain information. Relative to this study, the association was asked to indicate the number of families who considered that their children were seriously handicapped due to the different curriculum of the province to which they moved.

Out of 399 associations contacted, 207 submitted returns. The results indicated that out of 12,075 families, 1,436 or 12% of the families had moved interprovincially at least once during the past ten years and, of these, 275 families or 19% considered their children seriously handicapped by the new curriculum.<sup>28</sup> As a result of the survey, the Canadian Home and School and Parent-Teacher Federation has favoured some standardization of the core curricula for schools across Canada.

The above survey, although it has its merits, has certain limitations; namely; (1) the term "seriously handicapped" was not clearly defined to ensure uniformity of interpretation, and (2) some of the associations contacted did not cooperate in forwarding the information requested. However, even if there were no limitations, the results of the survey are based on mere opinion and this is not sufficient evidence to conclude that the lack of a common curriculum is the cause of serious difficulty in adjusting to a new school situation.

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<sup>28</sup> Research and Evaluation Committee, "The Survey as Regards the Core Curriculum for Canada," loc. cit.





Perhaps further insight into this problem, through a comparison of achievement between students categorized according to the type of transfer - system, province, elsewhere -, might be acquired from the present study.

The Testing and Research Office of the Department of Education carried out a study in Alberta during the school year 1962-63 to ascertain the number of transient students and any handicaps which may have resulted from the transfer in terms of upgrading, downgrading, or identical grade placement.

The grade placements reported in the study were the ones that applied at the time of arrival. A small number of students, 4%, were upgraded; 1.4% were downgraded, and 98.2% were placed in the same grade. Since no follow-up was undertaken to determine the number of students who were unable to hold their grade placement for the remainder of the term, nor to determine the number who had to repeat the grade, the actual effect of the transfer on student achievement cannot be satisfactorily measured.<sup>29</sup>

Nyberg's study, apparently, is the only research done in Canada which provides concrete knowledge of the effect of transiency in terms of test achievement.

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<sup>29</sup>Coordinator, op. cit., pp. 1-8.



### III. SUMMARY AND RELATIONSHIP TO PRESENT STUDY

#### Summary

In the review of non-Canadian studies, it was difficult to obtain a consensus of opinion in regard to the actual effect of transiency on student achievement. Furthermore, the findings of the majority of these studies, for reasons formerly specified, do not apply satisfactorily to Alberta schools. However, in spite of limitations, the following conclusion seems to be generally accepted by all; namely, that superior and slow learners are found at all occupational levels, but that there are positive relationships between socio-economic status and mental ability particularly when group averages are considered.

Nyberg's research, the only Canadian study that dealt with the effect of transiency in terms of test achievement, revealed that the achievement of transient students in social studies was significantly lower than that of the non-transient group; however, assurance of the validity of the results of his investigation is diminished by the unsatisfactory returns of the questionnaires.

Due to the limited number of matched pairs in the sample, many aspects of interest and possible consequence relating to the problem of transiency could not be dealt with in Nyberg's study. Questions such as the following were left unanswered:





1. Does transiency have the same effect on girls as it does on boys?
2. Does a transfer from another school district or from another province or country have the same effect on students as a transfer within the same school district?
3. Does transiency have the same effect on students who transfer during the term as it does on those who transfer during the summer vacation?
4. What effect has transiency on the slow learner as compared to the effect on those of above average intelligence?
5. Does transiency "per se" have an effect on the achievement of students due to problems of environmental adjustment, or does transiency have an effect on student achievement due to a lack of uniformity in regard to the curriculum?
6. Is the effect of transiency on Alberta students significant enough to merit the attention of school authorities?

The survey undertaken by the Canadian Home and School and Parent-Teacher Federation resulted in the favoring, by this Federation, of some standardization of the core curriculum for schools across Canada to assist transient students.

#### Relationship to Present Study

Aspects of transiency relating to the questions left





unanswered by Nyberg's study will be dealt with in the present study.

Likewise, an attempt will be made to ascertain the effect of interprovincial as compared with the effect of inter-system transfers to determine whether standardization of the core curriculum, desired by the Canadian Home and School and Parent-Teacher Federation, could be the panacea for transiency problems.

Since it was generally agreed that, as a group, there were positive relationships between socio-economic status and mental ability, the occupation of the father or guardian, or of the mother in case of a deceased father, will be held constant in both transient and non-transient groups to prevent the interference of this variable with the validity of the study.



## CHAPTER III

### EXPERIMENTAL PROCEDURE

This chapter will include the following aspects of the study: (1) sources of data, (2) instrumentation, (3) description of the instruments, (4) assumptions, (5) design of the study, (6) limitations, (7) definition of terms, (8) collection of the data, (9) treatment of the data, (10) null hypotheses, and (11) methods of analysis.

#### I. SOURCES OF DATA

Data for this thesis were obtained from two sources. All test achievement scores, which included the Otis Self-Administering Test of Mental Ability, Intermediate Form A scores, the Edmonton Separate School Elementary Standardized Test scores (ESSEST), and the Gates Reading Survey - Form 2 scores, were obtained from the Edmonton R.C. Separate School Board office files.

The name and sex of the pupil, the occupation of the father or guardian, and the pupil transiency data as specified in the section "Collection of the Data" were obtained by means of questionnaires.

#### II. INSTRUMENTATION

The instruments used in this study were twofold;





namely: (1) those used as control variables, and (2) those used as criteria of achievement.

The instruments used as control variables were:

1. The Otis Self-Administering Test of Mental Ability, Intermediate Form A.

2. The Occupational Class Scale as constructed by Bernard R. Blishen.

The instruments used as criteria of achievement were:

1. The Gates Reading Survey - Form 2.

2. The following Edmonton Separate School Elementary Standardized Tests (ESSEST):

- a) Arithmetic Test - Form II.

- b) Language Test - Form II.

- c) Elementary Science Test - Form II.

- d) Spelling Test - Form II.

### III. DESCRIPTION OF THE INSTRUMENTS

#### Otis Self-Administering Test of Mental Ability, Intermediate Form A

This is a verbal group test containing seventy-five questions designed for students in grades four to nine. Among the special features of this test are the following:

1. The test is "self-administering;" that is, the examiner has merely to distribute the test, see that all



pupils understand the printed directions, and give the signal to begin.

2. Scoring is simplified by the provision made in the test for placing the number of the correct answer in a single column at the edge of each page.

3. A wide variety of types of questions are included.

4. Sufficient time is allowed to give a more accurate measure of mental ability.

5. Charts for determining the IQ of the examinee, percentile graphs, and interpretation charts are provided for the convenience of the examiner.

The reliability of this test, as computed by the correlation of Intermediate Forms A and B, yields an average coefficient of .95.<sup>30</sup> The method of standardization is perhaps the best indication of the validity of the test. Preliminary editions, with more than enough items, were administered to 1,000 grammar school pupils. Because the test was designed for the purpose of predicting the rate at which a student could progress through school, the method of determining item inclusions was that of "per cent of passes" by groups of students making rapid school progress, as against those making slow school progress. Thus; each item justified its inclusion because it accomplished the object of the test.

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<sup>39</sup>Arthur S. Otis, Manual for Otis Self-Administering Tests of Mental Ability (New York: Harcourt, Brace and World, Inc., 1928), p. 12.





### Occupational Class Scale

The data used by Blishen to construct the occupational scale were taken from the decennial census of 1951 which classifies occupations according to a number of characteristics including income and years of schooling.

In constructing this scale, Blishen determined the average income and the average number of years of schooling, and computed the standard scores of these two measures. He then combined the two standard scores and ranked each occupation accordingly. The resulting list, which consisted of 343 occupations, was divided into seven classes as shown in "Appendix C".

Blishen's awareness of the relative prestige ranking of occupations was a major factor in the classification. He states:

The class divisions were somewhat arbitrary, and the sizes of the class intervals, in terms of the range of the combined standard scores, were unequal since to do so would have tended to combine some occupations of fairly low prestige, such as the occupation of telegraph operator, with those of physicians and surgeons.<sup>31</sup>

Rank correlations were computed between the ratings of occupational prestige as given in a study carried out in the United States by the National Opinion Research Center and the Blishen scale, and the result was a correlation of .94. Thus, it would seem that Blishen's occupational scale reflects the

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<sup>31</sup>Bernard R. Blishen, "The Construction and Use of an Occupational Class Scale," Canadian Society, Bernard R. Blishen, Kaspar D. Naegele, and John Porter, editors (Toronto: The MacMillan Company of Canada Limited, 1961), p. 478.





same variables which underlie prestige scales. Income and years of schooling, both of which were used in the Blishen scale, are two reliable indicators of prestige since the degree of specialized training or, as Blishen states, "the more skills required by an occupation, the greater its prestige, and thus the higher the social position of the person in such an occupation."<sup>32</sup>

#### Edmonton Separate School Elementary Standardized Tests

These tests were constructed by a committee of teachers and supervisors in the Edmonton R.C. Separate School System. They were designed to measure the important knowledge, skills, and understandings commonly accepted as desirable outcomes of some of the major branches of the elementary curriculum. Thus, the tests were constructed to provide teachers, administrators, and supervisors with dependable measures of these outcomes for use in connection with improvement of instruction, pupil guidance, and evaluation of pupil progress.

The ESSEST have been planned with a view towards simplicity of administration, scoring, and interpretation. They are carefully controlled in a manner similar to the Grade IX Departmentals. Specific directions for administering, scoring, and recording are sent out each year by the Director of Elementary Education to insure uniformity of administration and the greatest possible validity of results.

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<sup>32</sup>Ibid., p. 480.



Although the arithmetic, language, and science are time-limit tests, the time limits are calculated to give practically all pupils sufficient time to attempt all questions. The time limits are provided for administrative convenience and, therefore, cannot be termed "speed tests".

The tests were standardized on the total number of pupils in the system writing these tests in at least three consecutive grades. The approximate number of pupils writing these tests according to subject and grade level were the following:

Arithmetic, 8,000 pupils - grades 1 - 6 inclusive.

Language, 5,000 pupils - grades 4, 5, and 6.

Science, 6,000 pupils - grades 3 - 6 inclusive.

Spelling, 7,000 pupils - grades 2 - 6 inclusive.

Samples of each of the ESSEST, as well as the median and percentile norms based on the June, 1964 results, are included in "Appendix F". The norms for grade six were based on a population of 1,582.

No specific data are available to ascertain the degree of reliability and validity of these tests; however, it would seem that the manner in which they were constructed by a committee of competent supervisors and teachers, the careful control exercised in their administration and scoring, and the norms available to indicate a uniform gradation of achievement from one grade level to another would testify to their reliability







and validity. Furthermore, these tests are forwarded to the principal of the school just prior to the examination, and are kept in his custody until the time of administration. After the tests have been scored by the classroom teacher, they are returned to the principal together with a list of the scores obtained by the pupils. The scores are then forwarded by the principal to the Director of Elementary Education who prepares norms, after careful examination of the results, to be distributed along with other pertinent data to the various schools.

The ESSEST are presently under revision to insure that the content of the tests may continue to be closely attuned to what is actually being taught, and that dangers arising from over-familiarity of test content may be avoided.

#### The Gates Reading Survey - Form 2

The Reading Survey tests were designed to diagnose specific strengths and weaknesses in reading abilities, and thereby to indicate the type of instruction necessary for a class or individual pupil.

This Survey consists of three tests; namely: (a) the Speed and Accuracy Test, (b) the Vocabulary Test, and (c) the Level of Comprehension Test.

The Speed and Accuracy Test consists of thirty-six paragraphs of substantially equal difficulty with a multiple choice exercise at the conclusion of each paragraph to determine whether it has been understood. Since this test is a speed test, the time allowed is strictly controlled, and the score represents the speed of reading. This score is ascertained



by the number of exercises that are correct; however, an accuracy of reading score may also be obtained through the percentage of the exercises which were attempted and answered correctly.

The Vocabulary Test consists of sixty-five items each presenting a key word accompanied by five other words from which the one whose meaning is nearest the key word is chosen. The exercises, which are arranged in order of difficulty, measure the range and difficulty level of the pupil's ability to recognize and work out the meaning of words.

The Level of Comprehension Test consists of twenty-one passages arranged in order of increasing difficulty. The comprehension question at the end of each passage tests the pupil's ability to understand complex and difficult passages with reasonable thoroughness when he is not restricted by time limits.

Specific directions for administering and scoring these tests are given in the Manual.<sup>33</sup> Since the tests were designed for use as a team, all three tests should be given to secure the most valuable diagnosis. The average of the three scores will be the pupil's average grade score in reading ability.

In regard to the reliability of the test scores, we read in the Manual:

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<sup>33</sup>Arthur I. Gates, Manual for the Gates Reading Survey, (New York: Bureau of Publications, Teachers College, Columbia University, 1960), pp. 2-4.





The Gates reading tests were prepared, as are many others, with very great care, but no test, even if it were perfect, could itself make a child perform during the test period just as he normally does. Variations from the child's typical performance are the great source of unreliability in the test scores. His score may be affected more or less by his physical condition, whether he is tired, sleepy, indisposed, or feeling fine. . . . If an error is made in scoring a pupil's test, it will of course increase the unreliability of the pupil's score.<sup>34</sup>

The reliabilities, therefore, of the data used to answer questions about pupil's reading abilities vary greatly. However, the average score for two tests in a battery is more reliable than that for one test and, in general, the larger the number of tests included in the average, the more reliable it is. Similarly, the median of the scores of several pupils on one test is more reliable than the score of one pupil.

The Edmonton Separate School norms for the Gates Reading Survey for September, 1963 and September, 1964 are included with the Gates Reading Survey in "Appendix F".

#### IV. ASSUMPTIONS

1. That the Gates Reading Survey and the Edmonton Separate School Elementary Standardized Tests provide valid criteria for pupil achievement.

2. That there is a linear regression between the variables being correlated.

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<sup>34</sup>Ibid., pp. 9 - 10.





3. That the variables are normally distributed.
4. That there is homogeneity of variance among groups.
5. That the variables in the groups are random samples under the null hypothesis.

## V. DESIGN OF THE STUDY

### Population

The population included all the grade six pupils in the Edmonton R. C. Separate School System who were in attendance at the time the ESSEST were administered in June, 1964 and who were still attending school in the system during January and February, 1965 when the questionnaires were distributed. Thus, 1,341 pupils participated in the study; 700 were transient and 641 were non-transient students.

### Schools

This study includes only the forty-two Edmonton R. C. Separate Schools which contained grade six classes during the school year 1963-64 prior to the amalgamation of the Jasper Place schools.

### Criteria of Achievement

Achievement is ascertained in arithmetic, language, science, spelling, and reading based on the September, 1963 Gates Reading Survey - Form 2, and on the June, 1964 Edmonton Separate School Elementary Standardized Tests.



### Pupil I.Q. Score

The score used in this study is that obtained on the Otis Self-Administering Test of Mental Ability, Intermediate Form A.

### Occupation of the Father

The occupation of the father is ranked in conformity with the seven classes of the Occupational Class Scale as constructed by Bernard R. Blishen.

## VI. LIMITATIONS

The grade six students in the Edmonton R.C. Separate School System do not write a standardized test in social studies and literature; therefore, it is not possible to investigate the relationship between achievement and transiency in these two subjects.

The various reasons for transiency might have different effects on achievement. It is impossible in this study to trace family transient motives over a period of six years.

Other factors might influence the achievement of transient students. This study will not deal with the effect of a recent transfer as compared with the effect of a transfer undertaken in the primary grades, nor with the effect of a number of transfers made by a student within the same year as compared with the effect of the same number of transfers made over a period of years.





## VII. DEFINITION OF TERMS

Transient Students

In this study, transient students are defined as those students who have moved from one school to another within the Edmonton R. C. Separate School System, or who have moved to the system from elsewhere - either Provincially or otherwise - at any time from the first day of school in grade one to the closing day of school at the completion of grade six as of June, 1964.

Non-transient Students

Non-transient students are defined as those students who remained in the same Edmonton R. C. Separate school from the opening day of school in grade one to the closing day of school at the completion of grade six, June, 1964.

Test Achievement in Arithmetic, Language, Science, Spelling, and Reading

Test achievement in arithmetic, language, science and spelling is defined as the score obtained on the June, 1964 Edmonton Separate School Elementary Standardized Tests. (ESSEST)

Test achievement in reading is defined as the score obtained on the September, 1963 Gates Reading Survey - Form 2.

Completion of Grade Six - June, 1964

This term is defined here to include all grade six



pupils in the system who wrote the ESSEST in June, 1964 whether they successfully completed grade six or were retarded.

#### Occupation of the Father

Occupation of the father is defined as the employment of the father as of June, 1964. In the event of a deceased father and, in this case, in the absence of a guardian, the occupation of the mother is utilized in this study.

### VIII. COLLECTION OF THE DATA

The following information was obtained from the Edmonton R. C. Separate School Board office files:

1. The Otis Self-Administering Tests of Mental Ability, Intermediate Form A scores.
2. The Edmonton Separate School Board Elementary Standardized Test scores in arithmetic, language, science, and spelling.
3. The Gates Reading Survey - Form 2 scores.

The following information was obtained by means of questionnaires, a copy of which is included in "Appendix A".

1. Name and sex of pupil.
2. Occupation of the father or guardian as of June, 1964.
3. Pupil transiency category; that is, the number of transfers in each grade.





4. The time of the transfer in each case; namely, term or summer transfer.

5. Type of the last transfer; that is, a transfer from one school to another within the Edmonton R. C. Separate School System, to the system from the province of Alberta, or to the system from outside the province of Alberta.

After permission was obtained from Mr. H. A. MacNeil, Superintendent of the Edmonton R. C. Separate School District, to carry out the survey in the schools of the system, two schools of the system, which were subsequently included in the study, were chosen to participate in the "pilot study" to ascertain whether the questionnaires would be satisfactorily completed and validity assured.

Arrangements were made with the principals for an opportunity to meet the students in order to explain the purpose of the study and the various items of the questionnaire.

The questionnaires, accompanied by a letter of explanation which is included in "Appendix A", were brought home to be completed by the parents or to be checked for validity in those cases where the information had been supplied by the students themselves. When all questionnaires had been returned to the homeroom teachers, they were forwarded by the principal in the self-addressed envelopes provided for that purpose.

An examination of the questionnaires indicated satisfactory completion and validity of required data in that the





information given in No. 10 confirmed the number of transfers recorded in No. 9 of the questionnaire.

The same procedure as that used in the "pilot study" was followed immediately in the other schools of the system pertaining to this study. Due to the complete cooperation of students, parents, teachers, and principals, all the questionnaires were returned by the end of February, 1965.

## IX. TREATMENT OF THE DATA

The following data were coded, as shown in Table I "Appendix B", and punched on IBM cards in preparation for the computer processing of the data:

- Pupil I.Q. score
- Occupational class of father
- Scores in arithmetic, language, science, spelling and reading
- Sex
- No. of term transfers
- No. of summer transfers
- Total number of transfers
- Location from which last transfer was made
- Level of I.Q.
- Pupil identification number

Students who transferred to the system after the administration of the Gates Reading Survey early in September, or who for other reasons were not present when the test was administered, had their reading scores coded as "000"; thus, in all comparisons of reading achievement these students were non-participants.

In classifying students according to the three levels of achievement, the primary basis for the classification chosen



was the desire to ascertain the effect of transiency on the very superior students. The study of Sackett, which dealt with students of above average intelligence, indicated that transiency benefited these children. Therefore, the classification, in regard to levels of I. Q., was chosen to determine whether superior children, or those with an Otis score of 130 or more, actually benefit from transiency in Alberta schools.

#### X. NULL HYPOTHESES

The following null hypotheses tested in this study are assumed tenable unless the F-ratio attains the critical value required at the five per cent level of significance:

1. There is no significant difference in achievement between transient and non-transient girls.

2. There is no significant difference in achievement between transient and non-transient boys.

3. There is no significant difference in achievement between transient girls and transient boys.

4. There is no significant difference in achievement between girls who have one, two, three, four, five or more transfers.

5. There is no significant difference in achievement between boys who have one, two, three, four, five or more transfers.

6. There is no significant difference in achievement





between transient girls and transient boys who have one, two, three, four, five or more transfers.

7. There is no significant difference in the achievement of students who in the last transfer have transferred:

- a) from one school to another within the Edmonton R. C. Separate School System
- b) to the system from the province of Alberta
- c) to the system from other than Alberta schools.

8. There is no significant difference in the achievement of transient students according to the following levels of intelligence:

- a) Otis score of 130 or more
- b) Otis score of 110-129
- c) Otis score of 90-109 or less.

9. There is no significant difference in the achievement of students who have the following:

- a) term transfers only
- b) summer transfers only
- c) both term and summer transfers.

## XI. METHODS OF ANALYSIS

Two methods of analysis were used in the study; namely, (1) Analysis of Covariance, and (2) Multiple Linear Regression. Both methods of analyzing the data were carried out on an IBM 7040 computer at the University of Alberta.



### Analysis of Covariance

The Analysis of Covariance incorporates elements of Regression and Analysis of Variance. Because the analysis is computed on the basis of adjustment using the pooled regression equation, there may be and there are variable counts per group. This assumes homogeneity of variance among groups.

Necessary to the calculation of this analysis are the sum and means of the criteria and of the control variables of the grade six students. The criteria or dependent variables are the scores obtained by the students in arithmetic, language, science, spelling, and reading. The control or independent variables are the Otis Self-Administering Test of Mental Ability, Intermediate Form A scores and the occupational class scores.

The Analysis of Covariance is used to test Null Hypotheses I to VIII inclusive. The tables relating to the testing of these hypotheses include both the unadjusted and adjusted means of the criteria; that is, they include the means of the scores in arithmetic, language, science, spelling, and reading before and after they have been adjusted for differences in I. Q. and occupational status of the various subgroups.

The tables also include the source of variance; that is, the between group or within group variance, the degrees of freedom, the mean square for the "group" and "within" sources of variance, the adjusted F, and the probability or level of significance of the F-value. The "F" is the ratio of the mean square for the "between" group variance to the mean square for





for the "within" group variance. The number of students in each subgroup is recorded as "N".

### Multiple Linear Regression

The regression equation expresses the relationship between a single variable (criterion) and any number of independent variables. In this analysis, used to test Null Hypothesis IX, the independent variables or the predictors of the achievement of students who had term transfers only, summer transfers only, or a combination of term and summer transfers are the following:

1. I. Q.
2. Occupational class of father
8. Sex
9. No. of term transfers
10. No. of summer transfers
11. No. total
12. Term only
13. Summer only
14. Both term and summer
15. Term X No. of transfers
16. Summer X No. of transfers
17. Both term and summer X No. of transfers

The single variables or criteria used in this study are the following:

3. Arithmetic
4. Language
5. Science
6. Spelling
7. Reading.

The regression coefficients give the weights, a sample of which is given in "Appendix B", which each variable or predictor exerts in determining the score of the criterion when the influence of the other variables is excluded. In other





words, from the regression coefficients we can tell just what role each of the predictor variables plays in determining the scores in arithmetic, for example, when it is to be estimated from all of these independent variables in combination.

Table XVI on page 71 give the predictors used in each of the four different analyses to determine the achievement scores of students who were categorized according to the time of the transfer; that is, term transfers only, summer only, or a combination of both. Thus, the first analysis indicates the role played by the following predictors: term x No., summer x No., both x No., and total No. in determining the achievement scores in arithmetic, language, science, spelling, and reading when they are to be estimated from I. Q., occupation, sex, term only, summer only, both term and summer, term x No., summer x No., both x No., and total no. combined.

The second analysis determines the role played by term only, summer only, and both term and summer transfers in predicting the various achievement scores from a combination of predictor variables.

The third analysis determines the role played by the predictor, total No. of transfers, while the fourth analysis indicates the role played by sex in determining the various achievement scores when these are to be estimated from a combination of predictor variables.

Table XVI also includes the F-ratio, degrees of freedom, and probability.



## CHAPTER IV

### ANALYSIS OF DATA AND SUMMARY OF FINDINGS

This chapter analyzes the data from the testing of 1,341 grade six, Edmonton R.C. Separate School children. The fourteen tables included in this chapter record information concerning the testing of nine null hypotheses for differences in achievement between the following groups of students: (a) transient and non-transient girls, (b) transient and non-transient boys, (c) transient girls and boys, (d) girls with varied numbers of transfers, (e) boys with varied numbers of transfers, (f) girls and boys with varied numbers of transfers, (g) girls according to type of last transfer, (h) boys according to type of last transfer, (i) transient girls according to level of intelligence, (j) transient boys according to level of intelligence, and (k) girls and boys according to the time of the transfer.

### HYPOTHESIS I

There is no significant difference in achievement between transient and non-transient girls.

#### Results

The F-value required to indicate significant differences in achievement between transient and non-transient girls would be 3.86 at the .05 level, and 6.68 at the .01 level of confidence. An examination of Table II on the following page







TABLE II

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
TRANSIENT AND NON-TRANSIENT GIRLS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance				
	Tran- sient	Non-tran- sient	Tran- sient	Non-tran- sient	Source	DF	MS	Adjusted F	Probability
Arith- metic	78.97	83.54	80.07	82.22	Group Within	1 681	760.50 80.62	9.43**	.00225
Language	68.32	72.33	69.47	70.95	Group Within	1 681	357.33 62.79	5.69*	.01733
Science	71.37	76.68	72.71	75.06	Group Within	1 681	909.69 73.01	12.46**	.00046
Spelling	84.01	87.91	85.24	86.43	Group Within	1 681	232.34 102.59	2.26	.13235
Reading	66.25	70.57	67.74	69.00	Group Within	1 618	238.03 92.66	2.57	.10919

Required for significance with 1/681 df at the .05 level an f of 3.86\*; at the .01 level 6.68\*\*  
 Required for significance with 1/618 df at the .05 level an f of 3.86; at the .01 level 6.69

Transient N = 374 for all subjects except reading. Reading N = 319  
 Non-transient N = 311; Reading N = 303



reports significant differences in achievement, in favor of non-transient girls, in arithmetic and science on the .01 level, and in language on the .05 level of significance.

Although the adjusted means indicate a difference in spelling and reading achievement likewise in favor of non-transient girls, the observed F-ratio failed to reach the critical value of 3.86 required for significance at the .05 level.

### Discussion

The findings of this analysis point out that non-transient girls are superior in achievement both before and after the means are adjusted for I. Q. and occupation of the father. Thus, girls as a group are achieving significantly lower in at least three major subjects than they would had they never transferred. This difference is especially noteworthy in science achievement where the F-ratio of 12.46 far exceeded the value of 6.68 required at the .01 level of confidence.

### Conclusion

Null  $H_I$ , regarding no significant difference in the achievement of transient and non-transient girls, must be rejected pertaining to achievement in arithmetic, language, and science.





## HYPOTHESIS II

There is no significant difference in achievement between transient and non-transient boys.

Results

The adjusted means between transient and non-transient boys, although slight in all cases except in language achievement, are favorable to non-transient boys; however, the adjusted F-value of 3.77 marks a significant difference in language achievement between the two groups at the .05 level.

Discussion

Tables relating to the five and one per cent values of F signify that an F-value of 3.86 is required for significance at the .05 level with 1 and 652 degrees of freedom. Thus, in the present analysis, the F-value of 3.77 fails to reach the .05 level of significance; however, the probability or level of significance of the adjusted F as computed on the IBM machine, and shown in Table III is that of the .05 level; therefore, in this study, differences in language achievement between transient and non-transient boys will be interpreted as significant at the .05 level.

Conclusion

With the exception of language, there are no significant differences in achievement between transient and non-transient boys as evidenced in Table III. Null Hypothesis II is, therefore, accepted for all subjects except language.





TABLE III

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
TRANSIENT AND NON-TRANSIENT BOYS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance		
	Tran- sient	Non-tran- sient	Tran- sient	Non-tran- sient	Source	DF	MS      Adjusted F      Probability
Arith- metic	81.11	83.32	81.70	82.73	Group Within	1 652	171.86      2.13      .14498 80.87
Language	64.10	66.77	64.79	66.09	Group Within	1 652	276.73      3.77*      .05228* 73.31
Science	75.19	77.31	75.90	76.61	Group Within	1 652	82.34      1.04      .30888 79.45
Spelling	80.01	81.74	80.85	80.91	Group Within	1 652	.53      .004      .94947 125.37
Reading	65.57	67.79	66.66	66.78	Group Within	1 601	2.15      .02      .87844 90.01

Required for significance with 1/652 df at the .05 level an f of 3.86\*; at the .01 level 6.68  
Required for significance with 1/601 df at the .05 level an f of 3.86; at the .01 level 6.69

Transient N = 326; Reading N = 292.

Non-transient N = 330; Reading N = 313.

\*Significant at the .05 level as computed on the IBM machine.



## HYPOTHESIS III

There is no significant difference in achievement between transient girls and transient boys.

Results

The comparison of achievement between transient girls and transient boys, as recorded in Table IV, indicate significant differences between the adjusted means in all subjects except in reading. In all cases of significance, the F-value exceeded the 6.68 required at the .01 level of confidence. Transient girls achieved significantly better in language and spelling; transient boys, in arithmetic and science.

Discussion

These findings seem to mirror normal sex differences in achievement; however, a comparison of achievement between non-transient girls and boys - included in "Appendix B" - manifests differences which seem to indicate that the above findings reflect the effect of something more than normal sex differences in achievement.

In the comparison of achievement between non-transient girls and boys, the boys did not achieve significantly better in arithmetic than the girls. The F-value required for significance in both comparisons was 3.86 at the .05 level, and 6.68 at the .01 level. The magnitude of the differences in achievement between the two groups, as evidenced by the adjusted F is worthy of note. In the comparison of achievement between







TABLE IV

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
TRANSIENT GIRLS AND TRANSIENT BOYS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance			
	Boys	Girls	Boys	Girls	Source	DF	MS	Adjusted F Probability
Arithmetic	81.11	78.97	81.59	78.55	Group Within	1 696	1607.91 92.92	17.30** .00004
Language	64.10	68.32	64.58	67.91	Group Within	1 696	1915.29 70.96	26.99** .00000
Science	75.19	71.37	75.70	70.93	Group Within	1 696	3950.21 86.59	45.62** .00000
Spelling	80.01	84.01	80.63	83.47	Group Within	1 696	1401.30 112.10	12.50** .00045
Reading	65.57	66.25	66.32	65.56	Group Within	1 607	85.95 87.38	.98 .32169

Required for significance with 1/696 df at the .05 level an f of 3.86; at the .01 level 6.68\*\*  
 Required for significance with 1/607 df at the .05 level an f of 3.86; at the .01 level 6.69

Boys N = 326; Reading N = 292  
 Girls N = 374; Reading N = 319



non-transient girls and boys, the F-value was 3.54; whereas, it was 17.30 in the comparison of achievement between transient girls and boys. Similarly, transient boys exceeded the girls in science achievement with an F-value of 45.62; the non-transient boys, with an F-value of 13.80.

In regard to achievement in language and spelling, both transient and non-transient girls achieved significantly better than the boys, but here again comparisons of the adjusted F-values seem to indicate that something more than sex is implied in the findings. In the comparison of language achievement between the transient groups, the F-ratio attained the value of 26.99; between the non-transient groups, the value of 36.81. The F-value pertaining to the comparison of spelling achievement between the transient groups was 12.50; between the non-transient groups, the value of 23.12.

Although non-significant, differences in reading achievement in the transient groups are in favor of the boys; whereas, in the non-transient groups, they are in favor of the girls.

These findings, relating to differences in the level of significance as well as significant differences in arithmetic achievement between the transient and non-transient groups, would seem to indicate that girls, as a group, are affected to a greater degree by a transfer than the boys.

### Conclusion

Since there are observed differences in achievement





between transient girls and transient boys, over and above those of normal sex differences, Null Hypothesis III must be rejected in reference to arithmetic, language, science, and spelling achievement.

#### HYPOTHESIS IV

There is no significant difference in achievement between girls who have one, two, three, four, five or more transfers.

#### Results

According to the statistical comparison of achievement between girls with varied numbers of transfers given in Table V, none of the F-ratios attained the critical value of 3.37 required at the .01 level with 4 and 367 degrees of freedom, nor the value of 2.39 required at the .05 level of confidence with the corresponding number of degrees of freedom. Hence, no significant difference in achievement is observed between girls with varied numbers of transfers.

#### Discussion

Although there are no observed differences in achievement between girls who have experienced one transfer and those who have experienced five or more transfers, Table II, previously referred to, shows that girls who have transferred even once are, as a group, achieving significantly lower in several major subjects than girls who have never transferred. This seems to





TABLE V

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS WITH VARIED NUMBER OF TRANSFERS

Subject	No. of Transfers	N	Unadjusted Means	Adjusted Means	Source	Adjusted Analysis of Variance DF MS Adjusted F Probability
Arith- metic	1	188	80.47	79.68	Group	4 63.67 .69 .59938
	2	96	76.17	78.32		
	3	42	78.69	77.72	Within	367 92.21
	4	29	79.14	79.41		
	5 & over	19	78.63	77.37		
Language	1	188	69.92	69.13	Group	4 144.04 2.24 .06452
	2	96	66.30	68.45		
	3	42	67.43	66.46	Within	367 64.40
	4	29	67.76	68.03		
	5 & over	19	65.58	64.32		
Science	1	188	73.20	72.31	Group	4 134.01 1.69 .15097
	2	96	68.77	71.16		
	3	42	70.43	69.34	Within	367 79.17
	4	29	70.62	71.04		
	5 & over	19	69.63	68.20		
Spelling	1	188	84.86	83.96	Group	4 84.67 .79 .53339
	2	96	82.76	85.21		
	3	42	82.93	81.83	Within	367 107.33
	4	29	83.34	83.55		
	5 & over	19	85.42	84.01		
Reading	1	168	67.45	66.54	Group	4 150.28 1.81 .12727
	2	81	63.62	65.94		
	3	39	64.64	63.53	Within	312 83.18
	4	21	68.71	69.96		
	5 & over	10	68.50	66.63		

Required for significance with 4/367 df at the .05 level an f of 2.39; at the .01 level 3.37  
 Required for significance with 4/312 df at the .05 level an f of 2.40; at the .01 level 3.38



signify that even a single transfer has such an adverse effect on the achievement of girls that ensuing transfers show no additional loss.

### Conclusion

There is no observable significant difference in achievement between girls who have one, two, three, four, five or more transfers; therefore, Null Hypothesis IV is accepted.

### HYPOTHESIS V

There is no significant difference in achievement between boys who have one, two, three, four, five or more transfers.

### Results

The required F-ratio for significance with 4 and 319 degrees of freedom was an F-value of 2.40 at the .05 level, and 3.38 at the .01 level of confidence. Table VI shows a significant difference in science achievement between boys with varied numbers of transfers; that is, boys with one, two, or three transfers achieved significantly better in science than boys with four, and five or more transfers. This difference was manifest at the .01 level with an F-value of 3.69.

### Discussion

The achievement of boys with one, two, or three transfers appears to be unaffected by the transfers since the adjusted means of these three groups are almost identical







TABLE VI

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
BOYS WITH VARIED NUMBER OF TRANSFERS

Subject	No. of Transfers	N	Unadjusted Means	Adjusted Means	Source	Adjusted Analysis of Variance DF MS	Adjusted F	Probability
Arithmetic	1	168	81.70	81.57	Group	4 199.58	2.17	.07265
	2	82	80.79	81.18				
	3	47	82.87	82.34	Within	319 92.16		
	4	17	75.94	76.98				
	5 & over	12	75.42	75.25				
Language	1	168	64.67	64.46	Group	4 31.00	.40	.80935
	2	82	63.91	64.39				
	3	47	63.68	63.08	Within	319 77.73		
	4	17	61.65	62.89				
	5 & Over	12	62.58	62.76				
Science	1	168	76.11	75.90	Group	4 333.54	3.69**	.00595
	2	82	74.77	75.26				
	3	47	76.53	75.91	Within	319 90.44		
	4	17	71.47	72.75				
	5 & over	12	65.33	65.45				
Spelling	1	168	79.89	79.70	Group	4 52.04	.44	.78241
	2	82	80.56	81.12				
	3	47	80.02	79.25	Within	319 119.31		
	4	17	79.65	81.15				
	5 & Over	12	78.33	78.11				
Reading	1	148	64.98	64.87	Group	4 63.95	.70	.59161
	2	78	65.55	65.70				
	3	41	68.68	67.66	Within	285 91.15		
	4	16	64.56	66.02				
	5 & Over	9	63.11	65.69				

Required for significance with 4/319 df at the .05 level an f of 2.40; at the .01 level 3.38\*\*  
 Required for significance with 4/285 df at the .05 level an f of 2.40; at the .01 level 3.39



particularly in arithmetic, language, and science achievement. In the fourth and fifth transfer, however, achievement is significantly different in science on the .01 level, and in arithmetic approaching the .06 level of confidence. There is no observed difference in spelling and reading achievement between any of the subgroups. Thus, the findings of this analysis seem to indicate that where transiency has a direct bearing on the achievement of boys, it is only after the third transfer.

### Conclusion

Null Hypothesis V, of no significant difference in achievement between boys who have one, two, three, four, five or more transfers, is accepted in all subjects except that of science.

### HYPOTHESIS VI

There is no significant difference in achievement between transient girls and transient boys who have one, two, three, four, five or more transfers.

### Results

Comparison of achievement between girls and boys with one transfer, as presented in Table VII, reveals a significant difference in achievement in all subjects with the exception of reading. The girls show superiority of achievement in language and spelling; the boys, in arithmetic and science. In all cases





TABLE VII

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS AND BOYS WITH ONE TRANSFER

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance			
	Girls	Boys	Girls	Boys	Source	DF	MS	Adjusted F Probability
Arithmetic	80.47	81.70	79.80	82.45	Group Within	1 352	609.97 94.95	6.42** .01169
Language	69.92	64.67	69.24	65.43	Group Within	1 352	1267.80 69.30	18.29** .00002
Science	73.20	76.11	72.49	76.91	Group Within	1 352	1710.23 84.57	20.22** .00001
Spelling	84.86	79.89	83.91	80.95	Group Within	1 352	764.66 107.20	7.13** .00792
Reading	67.45	64.98	66.39	66.17	Group Within	1 312	3.73 86.26	.04 .83536

Required for significance with 1/352 df at the .05 level an f of 3.87; at the .01 level 6.71\*\*  
 Required for significance with 1/312 df at the .05 level an f of 3.87; at the .01 level 6.73

Girls N = 188; Reading N = 168

Boys N = 168; Reading N = 148

6.42\*\* - significant on the .01 level as computed on the IBM machine.





the differences in the adjusted means are significant at the .01 level. These findings are in harmony with Null  $H_{III}$  relating to differences in achievement between transient girls and boys without categorizing them according to the number of transfers.

Tables VIII and IX on pages 57 and 58 respectively present the findings relative to the comparison of achievement between girls and boys with two and three transfers. In both cases the boys still show superiority of achievement in arithmetic and science, as well as in reading in the third transfer. These differences are all significant on the .01 level. Girls with two transfers, on the other hand, show superior achievement in language only, and that at the .05 level of confidence. In the third transfer, girls no longer show superior achievement in any subject.

According to Tables X and XI on pages 59 and 60, there are no significant differences in the achievement of students who have transferred four, and five or more times.

### Discussion

These findings in regard to the boys were also reflected in the preceding analysis in that transiency did not seem to have any effect on the achievement of boys until after the third transfer. Thus, in the first three transfers only, the boys as a group maintained their superiority over girls in arithmetic and science achievement, and in reading in the third transfer.



TABLE VIII

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS AND BOYS WITH TWO TRANSFERS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance				
	Girls	Boys	Girls	Boys	Source	DF	MS	Adjusted F	Probability
Arith- metic	76.17	80.79	76.44	80.47	Group Within	1 174	716.33 103.52	6.92**	.00929
Language	66.30	63.91	66.58	63.59	Group Within	1 174	395.46 66.44	5.95*	.01570
Science	68.77	74.77	69.06	74.43	Group Within	1 174	1272.97 92.34	13.79**	.00028
Spelling	82.76	80.56	83.10	80.17	Group Within	1 174	378.95 105.58	3.59	.05981
Reading	63.62	65.55	64.11	65.04	Group Within	1 155	34.00 87.43	.39	.53379

Required for significance with 1/174 df at the .05 level an f of 3.90\*; at the .01 level 6.79\*\*  
 Required for significance with 1/155 df at the .05 level an f of 3.91; at the .01 level 6.80

Girls N = 96; Reading N = 81  
 Boys N = 82; Reading N = 78







TABLE IX

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS AND BOYS WITH THREE TRANSFERS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance			
	Girls	Boys	Girls	Boys	Source	DF	MS	Adjusted F Probability
Arith- metic	78.69	82.87	77.95	83.53	Group Within	1 85	683.25 64.00	10.68** .00157
Language	67.43	63.68	66.76	64.28	Group Within	1 85	134.18 69.74	1.92 .16904
Science	70.43	76.53	69.75	77.14	Group Within	1 85	1196.93 72.70	16.46** .00011
Spelling	82.93	80.02	82.14	80.73	Group Within	1 85	43.23 139.98	.31 .57984
Reading	64.64	68.68	63.85	69.44	Group Within	1 76	610.36 84.72	7.20** .00892

Required for significance with 1/85 df at the .05 level an f of 3.96; at the .01 level 6.95\*\*  
 Required for significance with 1/76 df at the .05 level an f of 3.97; at the .01 level 6.98\*\*

Girls N = 42; Reading N = 39  
 Boys N = 47; Reading N = 41



TABLE X

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS AND BOYS WITH FOUR TRANSFERS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance			
	Girls	Boys	Girls	Boys	Source	DF	MS	Adjusted F Probability
Arith- metic	79.14	75.94	78.53	76.98	Group Within	1 42	25.18 99.97	.25 .61836
Language	67.76	61.65	67.13	62.72	Group Within	1 42	202.86 86.07	2.36 .13222
Science	70.62	71.47	69.85	72.79	Group Within	1 42	90.78 74.30	1.22 .27529
Spelling	83.34	79.65	82.47	81.14	Group Within	1 42	18.32 139.35	.13 .71873
Reading	68.71	64.56	67.94	65.57	Group Within	1 33	50.51 97.10	.52 .47587

Required for significance with 1/42 df at the .05 level an f of 4.07; at the .01 level 7.27  
 Required for significance with 1/33 df at the .05 level an f of 4.14; at the .01 level 7.47

Girls N = 29; Reading = 21  
 Boys N = 17; Reading = 16





TABLE XI

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS AND BOYS WITH FIVE OR MORE TRANSFERS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance			
	Girls	Boys	Girls	Boys	Source	DF	MS	Adjusted F Probability
Arithmetic	78.63	75.41	77.63	77.01	Group Within	1 27	2.69 84.01	.03 .85943
Language	65.58	62.58	64.52	64.27	Group Within	1 27	.43 109.24	.003 .95045
Science	69.63	65.33	68.72	66.78	Group Within	1 27	26.48 111.98	.24 .63070
Spelling	85.42	78.33	84.19	80.29	Group Within	1 27	107.07 106.72	1.00 .32541
Reading	68.50	63.11	65.61	66.33	Group Within	1 15	2.19 93.26	.02 .88025

Required for significance with 1/27 df at the .05 level an f of 4.21; at the .01 level 7.68

Required for significance with 1/15 df at the .05 level an f of 4.54; at the .01 level 8.68

Girls N = 19; Reading N = 10

Boys N = 12; Reading N = 9





The fact that no significant differences in achievement are observed between girls and boys who have transferred more than three times seems to further indicate that these differences in achievement are not attributable solely to normal sex differences.

### Conclusion

There were no significant differences in achievement observed between girls and boys with four, and five or more transfers; thus, Null Hypothesis VI is accepted in these cases.

The null hypothesis is rejected in the following cases:

One transfer - rejected in all subjects except reading  
Two transfers - arithmetic, language, science  
Three transfers - arithmetic, science, reading

### HYPOTHESIS VII

There is no significant difference in the achievement of students who in the last transfer have transferred: (a) from one school to another within the Edmonton R.C. Separate School System, (b) to the system from the province of Alberta, or (c) to the system from other than Alberta schools.

### Results

Tables XII and XIII indicate no significant difference in achievement between students according to the type of the last transfer; that is, no significant difference in achievement is observable in any subject between students whose last transfer has been from one school to another within the



TABLE XII

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
GIRLS ACCORDING TO TYPE OF LAST TRANSFER

Subject	Last Transfer	N	Unadjusted Means	Adjusted Means	Source	DF	MS	Adjusted F	Probability
Arith-metic	System	272	78.63	78.95	Group	2	159.98	1.75	.17554
	Province	74	80.26	77.92	Within	369	91.53		
	Other	28	78.89	81.94					
Language	System	272	68.19	68.51	Group	2	162.32	2.51	.08277
	Province	74	69.08	66.76	Within	369	64.73		
	Other	28	67.57	70.59					
Science	System	272	71.39	71.74	Group	2	99.73	1.25	.28719
	Province	74	72.46	69.89	Within	369	79.66		
	Other	28	68.29	71.71					
Spelling	System	272	83.19	83.55	Group	2	170.00	1.59	.20477
	Province	74	87.11	84.54	Within	369	106.75		
	Other	28	83.79	87.08					
Reading	System	236	65.30	65.74	Group	2	124.27	1.48	.22844
	Province	60	70.92	67.97	Within	314	83.77		
	Other	23	63.83	67.00					

Required for significance with 2/369 df at the .05 level an f of 3.02; at the .01 level 4.67

Required for significance with 2/314 df at the .05 level an f of 3.03; at the .01 level 4.68







TABLE XIII

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
BOYS ACCORDING TO TYPE OF LAST TRANSFER

Subject	Last Transfer	N	Unadjusted Means	Adjusted Means	Source	Adjusted Analysis of Variance		
						DF	MS	Adjusted F Probability
Arith-metic	System	245	80.42	80.58	Group Within	2	145.56	1.56 .21122
	Province	53	83.53	82.39		321	93.17	
	Other	28	82.57	83.33				
Language	System	245	64.09	64.30	Group Within	2	204.74	2.68 .06996
	Province	53	63.19	61.94		321	76.36	
	Other	28	65.89	66.46				
Science	System	245	74.97	75.19	Group Within	2	14.80	.16 .85432
	Province	53	76.08	74.76		321	93.94	
	Other	28	75.46	76.04				
Spelling	System	245	79.92	80.14	Group Within	2	135.79	1.15 .31889
	Province	53	79.94	78.32		321	118.37	
	Other	28	80.93	82.06				
Reading	System	220	65.13	65.30	Group Within	2	58.49	.64 .52673
	Province	47	67.23	65.80		287	91.00	
	Other	25	66.32	67.56				

Required for significance with 2/321 df at the .05 level an f of 3.03; at the .01 level 4.68

Required for significance with 2/287 df at the .05 level an f of 3.03; at the .01 level 4.69



system, to the system from other Alberta schools, or to the system from elsewhere.

### Discussion

Since the F-ratios failed to attain the critical values required for significance at the .05 level, it seems evident that students, as a group, who have transferred to the system from other schools in Alberta or from schools outside the province are achieving just as well as, or at least not significantly lower than, those who have transferred within the system itself.

The adjusted means would seem to indicate, at first sight, significant differences in achievement between the three groups in favor of students who had transferred to the system from schools outside the province of Alberta; however, this apparent difference is due to the variable numbers of students per group. For example, in the girls' groups there were 272 "system" transfers, 74 transfers to the system from Alberta schools, and only 28 transfers from other than Alberta schools. When these variable counts per group are controlled, the adjusted F-values do not approach the 3.03 required for significance even at the .05 level. In fact, the Mean square indicates greater variance among the boys' "within" groups than the variance "between" groups in science and reading.





### Conclusion

The adjusted F-values indicate no significant differences in the achievement of students whose last transfer has been from one school to another within the Edmonton R.C. Separate School System, to the system from Alberta schools, or to the system from elsewhere; therefore, Null Hypothesis VII is accepted.

### HYPOTHESIS VIII

There is no significant difference in the achievement of transient students according to the following levels of intelligence: (1) Otis score of 130 or more, (2) Otis score of 110-129, and (3) Otis score of 90-109 or less.

### Results

In the comparison of achievement between transient girls, Table XIV shows a significant difference in spelling achievement at the .01 level in favor of the lowest I.Q. group. Although non-significant, differences in language achievement between the lowest and highest I.Q. groups approaching the .05 level were evident in favor of the latter. In regard to reading, science, and arithmetic achievement, differences "within" groups were greater than differences "between" groups.

In the boys' groups, differences in reading, although non-significant, approached the .05 level favorable to the highest I.Q. group. In all other subjects, differences "within" groups exceeded the variance "between" groups.





TABLE XIV

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN TRANSIENT  
GIRLS ACCORDING TO LEVEL OF INTELLIGENCE

Subject	Level of I.Q.	N	Unadjusted Means	Adjusted Means	Adjusted Analysis of Variance		
					Source	DF	Adjusted F Probability
Arithmetic	130 & more	19	91.16	77.34	Group	2	
	110-129	169	84.72	79.18	Within	369	.73701
	90-109 & less	186	72.50	78.94			
Language	130 & more	19	81.74	70.57	Group	2	
	110-129	169	74.43	69.94	Within	369	.06406
	90-109 & less	186	61.41	66.63			
Science	130 & more	19	84.26	69.29	Group	2	
	110-129	169	77.99	71.92	Within	369	.40931
	90-109 & less	186	64.04	71.09			
Spelling	130 & more	19	93.47	74.62	Group	2	
	110-129	169	90.28	82.81	Within	369	5.58**
	90-109 & less	186	77.35	86.07			.00410
Reading	130 & more	15	83.40	68.59	Group	2	
	110-129	145	73.26	67.32	Within	314	.91
	90-109 & less	159	58.23	65.05			.40468

Required for significance with 2/369 df at the .05 level an f of 3.02; at the .01 level 4.67

Required for significance with 2/314 df at the .05 level an f of 3.03; at the .01 level 4.68\*\*



## Discussion

With 2 and 369 degrees of freedom, an F-value of 3.02 was required for significance at the .05 level, and an F-value of 4.67 at the .01 level. The only significant difference in achievement observed was that in spelling where girls of the lowest I.Q. group achieved significantly better than those of the other two groups.

In spelling, science, and arithmetic, the superior groups, as shown in Tables XIV and XV, appear to be under-achieving.

## Conclusion

Null Hypothesis VIII, relating to no significant differences in achievement between students categorized according to three levels of intelligence, is accepted in all cases except in the spelling achievement of girls.

## HYPOTHESIS IX

There is no significant difference in the achievement of students who have the following: (1) term transfers only, (2) summer transfers only, and (3) both term and summer transfers.

## Results

Analysis I. As predictors of student achievement, no significant difference was observed in Table XVI between the following: term transfers x No., summer transfers x No.,





TABLE XV

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN TRANSIENT  
BOYS ACCORDING TO LEVEL OF INTELLIGENCE

Subject	Level of I.Q.	N	Unadjusted Means	Adjusted Means	Source	DF	MS	Adjusted F	Variance Probability
Arithmetic	130 & more	18	91.39	79.67	Group	2	13.27	.14	.86838
	110-129	118	86.22	81.05	Within	321	93.99		
	90-109 & less	190	76.96	81.28					
Language	130 & more	18	77.72	65.90	Group	2	42.79	.55	.57594
	110-129	118	68.79	63.64	Within	321	77.37		
	90-109 & less	190	59.90	64.22					
Science	130 & more	18	87.11	74.25	Group	2	5.45	.06	.94356
	110-129	118	80.69	75.10	Within	321	94.00		
	90-109 & less	190	70.65	75.34					
Spelling	130 & more	18	94.17	76.32	Group	2	96.36	.81	.44486
	110-129	118	86.97	79.06	Within	321	118.62		
	90-109 & less	190	74.35	80.95					
Reading	130 & more	17	89.29	70.54	Group	2	241.34	2.69	.06958
	110-129	100	72.95	64.66	Within	287	89.73		
	90-109 & less	175	59.05	65.61					

Required for significance with 2/321 df at the .05 level and f of 3.03; at the .01 level 4.68  
 Required for significance with 2/287 df at the .05 level and f of 3.03; at the .01 level 4.69



TABLE XVI

RESULTS OF MULTIPLE LINEAR REGRESSION IN TESTING  
THE RELATIONSHIP BETWEEN ACHIEVEMENT  
AND TIME OF TRANSFER

Predictors of Achievement	Criteria	DF	F-ratio	Required F .05 .01	Significant S	Time of Transfer	Prob.
Term x No. Summer x No. Both x No. Total No.	Arithmetic	2/691	1.48	3.01 4.64			.22691
	Language	2/691	1.90	3.01 4.64			.15024
	Science	2/691	1.65	3.01 4.64			.19265
	Spelling	2/691	.29	3.01 4.64			.75470
	Reading	2/602	.52	3.01 4.65			.59869
Term Summer Both	Arithmetic	2/693	.97	3.01 4.64			.37838
	Language	2/693	.82	3.01 4.64			.44125
	Science	2/693	.06	3.01 4.64			.94164
	Spelling	2/693	.06	3.01 4.64			.37122
	Reading	2/604	4.27	3.01 4.65	S	Summer	.01442
Total No. of transfers	Arithmetic	1/693	7.28	3.86 6.68	S	Summer	.00719
	Language	1/693	2.62	3.86 6.68			.10551
	Science	1/693	10.25	3.86 6.68	S	Summer	.00146
	Spelling	1/693	.28	3.86 6.68			.60050
	Reading	1/604	6.97	3.86 6.69	S	Summer	.00851
Sex	Arithmetic	1/693	16.94	3.86 6.68	S	Summer	.00005
	Language	1/693	28.30	3.86 6.68	S	Summer	.00000
	Science	1/693	44.61	3.86 6.68	S	Summer	.00000
	Spelling	1/693	12.59	3.86 6.68	S	Both	.00043
	Reading	1/604	2.47	3.86 6.69			.11592
Term x No.: Students who have transferred during the term times the number of transfers made by each student.							

For explanation of Table XVI, please see pp. 40, 41, and 92.





both x No., and total No. of transfers when all other predictor variables used in this study were held constant.

In analysis II, III, and IV, all differences in predictors of achievement are significant at the .01 level of confidence.

Analysis II. Summer transfers only were significant in predicting reading achievement when I.Q., occupation, sex, and total No. of transfers were held constant.

Analysis III. The total No. of transfers were significant in predicting arithmetic, science, and reading achievement of students who had summer transfers only. In this analysis I.Q., occupation, sex, and the time of the transfers were held constant.

Analysis IV. Sex was significant in predicting arithmetic, language, and science achievement of students who had summer transfers only and, in predicting spelling achievement of students who had both term and summer transfers. I.Q., occupation, time of the transfer, and total number of transfers were held constant.

### Discussion

Table XVI indicates the highly significant role played by certain variables when predicting the achievement of students who have transferred during the summer as com-





pared with transfers at any other time of the year. Students who transfer during the summer can be expected to achieve significantly better than students who transfer at any other time.

Sex used as a predictor of achievement according to the time of the transfer is highly significant in favor of summer transfers only; thus, where an F-value of 6.68 was required for significance, the values of 16.94 in arithmetic, 28.30 in language, 44.61 in science far exceeded the .01 level of confidence.

The results of the comparison of achievement between transient girls and transient boys indicated that as a group the achievement of girls was affected to a greater degree by a transfer than was that of the boys. This analysis seems to indicate that if girls, as a group, transferred during the summer vacation only, their achievement would be significantly better.

### Conclusion

Students, and especially girls as a group, who transferred during the summer only are achieving significantly better than those who have transferred at any other time of the school year; therefore, Null Hypothesis IX must be rejected.



## SUMMARY OF FINDINGS

In all cases in the treatment of data in testing the null hypotheses, the difference between two means was considered to be statistically significant only if the F-ratio attained the critical value at the .01 or .05 level of confidence indicating that the differences were not due to chance nor to errors of sampling.

The relationship of transiency to test achievement is expressed in the summary of findings given in Table XVII. In general, these findings are as follows:

1. The achievement of transient girls is significantly lower than that of non-transient girls in arithmetic, language, and science.

2. Transiency has a greater effect on the achievement of girls than on that of boys.

3. Girls who have transferred once are hindered in achievement just as much as those who have had several transfers.

4. Transiency does not appear to affect the achievement of boys in any subject other than language until after the third transfer.

5. Transfers within the system have the same effect on student achievement as transfers from other Alberta schools or from schools outside the province.





TABLE XVII

SUMMARY OF FINDINGS - COMPARISONS  
OF ACHIEVEMENT

Null H	Comparison of Achievement Between	Arithmetic		Language		Science		Spelling		Reading	
		Level of sig.	In favor of	Level of sig.	In favor of	Level of sig.	In favor of	Level of sig.	In favor of	Level of sig.	In favor of
I	Tran. & non-tran. girls	.01	Non-tran.	.05	Non-tran.	.01	Non-tran.	N.S.D.		N.S.D.	
II	Tran. & non-tran. boys	N.S.D.		.05	Non-tran.	N.S.D.		N.S.D.		N.S.D.	
III	Tran. girls & boys	.01	boys	.01	girls	.01	boys	.01	girls	N.S.D.	
IV	Girls - No. of tran.	N.S.D.		N.S.D.		N.S.D.		N.S.D.		N.S.D.	
V	Boys - No. of tran.	N.S.D.		N.S.D.		.01	1,2,3 tran.	N.S.D.		N.S.D.	
VI	Girls & boys - No. of tran. 1,2,3,4, 5 & more	.01 .01 .01 N.S.D. N.S.D.	boys boys boys	.01 .05 N.S.D. N.S.D. N.S.D.	girls girls	.01 .01 .01 N.S.D. N.S.D.	boys boys boys	.01 N.S.D. N.S.D. N.S.D. N.S.D.	girls	N.S.D. N.S.D. .01 N.S.D. N.S.D.	boys
VII	System, Prov., Other	N.S.D.		N.S.D.		N.S.D.		N.S.D.		N.S.D.	
VIII	Levels of I.Q.	N.S.D.		N.S.D.		N.S.D.		.01	**	N.S.D.	
IX	Term only Summer " Both	N.S.D. N.S.D. .01 .01	sum. sum.	N.S.D. N.S.D. N.S.D. .01	sum.	N.S.D. N.S.D. .01 .01	sum. sum.	N.S.D. N.S.D. N.S.D. .01	sum. & term	N.S.D. .01 .01 N.S.D.	Summer Summer

\*\* Girls in lowest I.Q. group achieved significantly higher.  
N.S.D. - No significant difference.



6. Transiency affects the achievement of the gifted students in much the same way as it does those of other levels of intelligence; in fact, the gifted students appear to be under-achieving.

7. Summer transfers are better predictors of student achievement than term transfers or a combination of both. Girls, in particular, who transfer during the summer achieve significantly better than those who transfer at any other time of the school year.



## CHAPTER V

### SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

#### I. PURPOSE OF THE STUDY

This study was carried out to ascertain the nature and magnitude of the relationship between transiency and student achievement and, thereby, to provide further knowledge pertaining to the teaching-learning situation.

#### II. HYPOTHESES

Nine null hypotheses were tested which included the comparison of achievement in arithmetic, language, science, spelling, and reading between the following groups of pupils:

1. Transient and non-transient girls.
2. Transient and non-transient boys.
3. Transient girls and transient boys.
4. Girls with varied numbers of transfers.
5. Boys with varied numbers of transfers.
6. Girls and boys with corresponding varied number of transfers.
7. Students whose last transfer was from one school to another within the system, to the system from the province of Alberta, and to the system from elsewhere.





8. Transient students according to three levels of intelligence.

9. Students who had term transfers only, summer transfers only, and a combination of term and summer transfers.

### III. INSTRUMENTATION AND METHODOLOGY

The data used in the study were obtained from the Edmonton Separate School Board office files and from questionnaires which were administered to all the grade six students in the system as of June, 1964. The data for the 1,341 students were coded and punched on IBM cards in preparation for the computer processing of the data.

The methods of analysis used were that of Analysis of Covariance, which incorporates elements of Regression and Analysis of Variance, and Multiple Linear Regression. The null hypotheses were rejected only if the F-ratios attained the critical value at the one per cent or the five per cent level of confidence.

### IV. CONCLUSIONS

The conclusions of this study are based on a careful study of the analysis of the data as presented in Tables II through XVII. The significance of the F-values was determined by means of authorized tables relating to the five and one per cent values of F, from the reference books listed in



"Appendix B", as well as from the IBM probability level.

Consistency was characteristic of the results of the study. In all comparisons of achievement between transient and non-transient students, differences in means were always in favor of the non-transient students. Non-transient girls in the system are achieving significantly better in arithmetic, language, and science than the transient girls. Non-transient boys are achieving significantly better than the transient boys in language.

The above evidence, together with the evidence provided in Table IV, page 48 on the comparison of achievement between transient girls and boys, and Table XVIII, "Appendix B" on the comparison of achievement between non-transient girls and boys, leads to the conclusion that transiency has a greater effect on the achievement of girls than on that of the boys.

As a result of normal sex differences, boys achieve better than girls in arithmetic and science; girls better than boys, in language and spelling. This study, as evidenced in Tables IV and XVIII above, shows more than sex differences mirrored in the adjusted means and F-values. There was no significant difference in arithmetic achievement between the non-transient girls and boys, nor were the differences in means between groups as highly significant as those of the transient groups. Thus, there is a significant difference







in achievement between transient girls and boys which cannot be accounted for by sex differences.

Transiency does not significantly affect the achievement of boys in any subject other than language until after the third transfer; whereas, the achievement of girls is affected by the first transfer to the degree that achievement is not lowered by succeeding transfers.

Neither the achievement of girls nor boys was affected by the type of the transfer; that is, the adjusted means of students who transferred within the system showed no difference in achievement in any subject from those of the students who had transferred to the system from other Alberta schools or from schools outside the province. Therefore, a transfer from another school district or from another province or country has the same effect on students, as a group, as a transfer within the same school district.

Transiency affects the achievement of the gifted students as well as those of other levels of intelligence. In arithmetic, science, and spelling, the gifted students seem to be under-achieving. As a group, therefore, transiency does affect the gifted student as well as those of other levels of intelligence.

Finally, the over-all effect of transiency appears to be mitigated to a significant degree if the transfer is made during the summer vacation rather than at any other



time of the year; thus, in our dynamic society, where transfers are a necessity for various reasons, this study seems to indicate that students in the system who transfer during the summer will be hindered less in maximum achievement than similar students who transfer during the term.

In reference to the questions left unanswered by Nyberg's study, the following conclusions might be stated in regard to students, as a group, in the Edmonton Separate School System:

1. Transiency does not have the same effect on boys as it does on girls.
2. Transfers from other school districts, provinces, or countries have the same effect on students as transfers within the same school district. This may be due to as much curriculum variation within as between systems, or to problems of environmental adjustment affecting the child to a greater degree than is experienced by the lack of a common curriculum.
3. The time of the transfer is important. Summer transfers are greater predictors of achievement than transfers at any other time of the school year.
4. Transiency, especially among girls, affects students on all levels of intelligence.
5. The effect of transiency on the achievement of these students is significant enough to merit the attention of the system as a whole since anything significantly hindering the





maximum achievement of such a large number of students is worthy of concerted effort on the part of parents, teachers, and administrators.

## V. IMPLICATIONS

Since transfers from other school districts and provinces have the same effect on the achievement of students as those within a school system, standardization of the core curriculum would not seem to be the panacea of our transiency problems. This implies further research to determine the cause of the difficulty in adjusting to a new school situation.

The fact that the gifted child is unable to cope with a transfer any better than other children and that, in reality, he appears to be under-achieving, might imply the need for enrichment, for better understanding of these students by the individual classroom teacher, or for means of motivating them to maximum achievement.

The results of this study relating to differences in student achievement according to the time of the transfer might suggest to parents the advantage of transferring their children to a new school situation during the summer vacation if at all possible.

The greater effect of transiency on the achievement of girls would seem to indicate that increased effort should be made to help girls to adjust to the new school situation





without delay through ascertaining their strengths and weaknesses, their interests and abilities, by helping them to fill in the gaps in curriculum discrepancies, and giving them the feeling of belongingness.

## VI. RECOMMENDATIONS FOR FURTHER STUDY

Since this study has indicated that transfers from other schools in the province or outside the province of Alberta had the same effect on the achievement of students as those within the system, experiments might be carried out to determine whether standardization of the core curriculum would indeed be the answer to transiency problems. A study could be conducted on one grade level with one or two classes in each of the capital cities across Canada. Programed instruction might serve as the basis for standardization in the experiment.

Experiments using a case study approach might be conducted to ascertain the most effective means of assisting transient students to adjust more readily to new environments and to new school situations.

A study, by way of a control and an experimental group, to determine means of assisting the gifted students to maximum achievement might be beneficial. A study on the merits of transition classes for the gifted as a means of providing individualized instruction in preference to attendance in the regular classroom setting, might be conducted.



A survey, of the questionnaire type, to ascertain from the students themselves their own particular difficulties, fears, uncertainties, and frustrations encountered in transiency might be carried out.

A study might be conducted to discover why transiency affects the achievement of girls more than that of the boys.

Further research to determine the cause of the underachievement of the gifted students would be beneficial.





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## APPENDIX A





## QUESTIONNAIRE

1. Name of pupil in full \_\_\_\_\_
2. Date of birth Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_
3. Age of pupil as of June 30, 1964 Years \_\_\_\_\_ Months \_\_\_\_\_
4. Grade pupil was in last year \_\_\_\_\_
5. Name of last school attended in June, 1964 \_\_\_\_\_
6. Sex of pupil (check correct answer) Male \_\_\_\_\_ Female \_\_\_\_\_
7. Occupation of the father or guardian as of June 30, 1964  
Please be specific. \_\_\_\_\_
8. Family telephone number \_\_\_\_\_
9. Circle the correct answer. If you transferred more than five times in any grade, please put the number of times in the blank provided at the right.  
  
Number of transfers in grade one were: 0, 1, 2, 3, 4, 5, \_\_\_\_\_  
Number of transfers in grade two were: 0, 1, 2, 3, 4, 5, \_\_\_\_\_  
Number of transfers in grade three were: 0, 1, 2, 3, 4, 5, \_\_\_\_\_  
Number of transfers in grade four were: 0, 1, 2, 3, 4, 5, \_\_\_\_\_  
Number of transfers in grade five were: 0, 1, 2, 3, 4, 5, \_\_\_\_\_  
Number of transfers in grade six were: 0, 1, 2, 3, 4, 5, \_\_\_\_\_  
  
Please do not include any transfers after June 30, 1964.
10. For each time that you transferred, please give the following information at the back of this questionnaire:
  - a) The grade in which you transferred.
  - b) The school and province (country) from which you transferred.
  - c) The school and province (country) to which you transferred.
  - d) The time of the year in which you transferred; that is, during the school term, or during the summer holidays.

Note ... Please be sure that the number of transfers you have recorded in question 9 corresponds exactly with the information given in question 10.



University of Alberta  
Pembina Hall, Room 250  
Edmonton, Alberta  
January 18, 1965

Dear Parents,

The purpose of this questionnaire is to help determine whether transiency (the transfer of a pupil from one school to another) has an effect on the achievement of students, to determine whether the number of transiencies, the locality from which the students transfer, the occupation of the father, or the time of the transfer significantly influence the achievement of students.

This questionnaire, which is a part of my Master's thesis, has been approved by Mr. H.A. MacNeil, Superintendent of the Edmonton R.C. Separate School District.

The study will be a success only in the measure of your cooperation. Since anything which may have an effect on the achievement of your children is of interest to you as well as to teachers, administrators, and the System as a whole, I feel confident that I can count on your whole-hearted support.

Gratefully yours,

*Sister Mary Annata*

Sister Mary Annata



## APPENDIX B





TABLE I  
CODED DATA FOR I.B.M. CARDS

I.D. Number	77-80	2576	2577	2578
Level of I.Q. ( <u>1</u> , 130 & over; <u>2</u> , 110-129; <u>3</u> , 90-109 & under)	32	2	2	1
Last transfer ( <u>1</u> , system; <u>2</u> , province; <u>3</u> , other)	31	2	2	1
Total number of transfers	29-30	06	06	01
No. of summer transfers	27-28	02	02	00
No. of term transfers	25-26	04	04	01
Transient ( <u>1</u> , yes; <u>2</u> , no.)	24	1	1	1
Sex ( <u>1</u> , M; <u>2</u> , F)	23	2	1	2
Reading	20-22	000	070	087
Spelling	17-19	094	084	092
Science	14-16	071	067	085
Language	11-13	085	062	094
Arithmetic	8-10	090	084	094
Occupational category	5-7	007	007	005
I. Q.	2-4	114	124	131
Column 1				



## I.B.M. OUTPUT ON PERSUB MULTIPLE LINEAR REGRESSION

MODEL 15      0.000010  
 CRITERION      7  
 PREDICTORS      1- 2  
                  8- 8  
                  11-14

R SQ= 0.14157630

VAR. NUMBER	STD. WT.	ERROR
1	0.26186169	-0.00034873
2	-0.11038789	0.00027736
8	-0.05492543	0.00067774
11	-0.10733921	-0.00156068
12	0.00000000	0.00007290
13	0.10402006	-0.00008040
14	-0.01018625	-0.00000000

VAR. NUMBER	WEIGHT
1	0.47050538
2	-1.46654170
8	-2.79581552
11	-2.04273160
12	0.00000000
13	5.83778928
14	-0.67321355

CONSTANT=      20.03982064





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TABLE XVIII

STATISTICAL COMPARISON OF ACHIEVEMENT BETWEEN  
NON-TRANSIENT GIRLS AND BOYS

Subject	Unadjusted Means		Adjusted Means		Adjusted Analysis of Variance			
	Boys	Girls	Boys	Girls	Source	DF	MS	Adjusted F Probability
Arithmetic	83.32	83.54	84.02	82.79	Group Within	1 637	234.13 66.17	3.54 .06022
Language	66.77	72.33	67.57	71.48	Group Within	1 637	2368.85 64.32	36.81** .00000
Science	77.31	76.68	78.17	75.76	Group Within	1 637	901.20 65.30	13.80** .00023
Spelling	81.74	87.91	82.73	86.86	Group Within	1 637	2648.30 114.52	23.12** .00000
Reading	67.79	70.57	68.88	69.44	Group Within	1 612	48.02 94.49	.51 .47667

Required for significance with 1/637 df at the .05 level an f of 3.86; at the .01 level 6.68\*\*  
 Required for significance with 1/612 df at the .05 level an f of 3.86; at the .01 level 6.69

Boys N 330; Reading N 313  
 Girls N 311; Reading N 303



## APPENDIX C





# AN OCCUPATIONAL CLASS SCALE

Occupations Ranked and Grouped According to Combined Standard Scores for Income and Years of Schooling, by Sex, Canada, 1951

Occupation	Sex	Score	Occupation	Sex	Score
<u>Class 1</u>					
Judges	M	90.0	Agricultural professionals	M	64.8
Dentists	M	82.5	Electricity, gas & water officials	M	64.7
Physicians & surgeons	M	81.2	Other professions	M	64.0
Lawyers	M	78.8	Construction managers	M	63.8
Engineers, chemical	M	77.8	Wholesale trade managers	M	63.5
Actuaries	M	77.6	Librarians	F	63.4
Engineers, mining	M	77.4	Authors, editors & journalists	M	63.4
Engineers, electrical	M	75.2	Manufacturing managers	M	63.0
Engineers, civil	M	75.0	Community service workers	M	62.4
Architects	M	73.2	Social welfare workers	F	62.2
<u>Class 2</u>					
Statisticians	F	72.9	Osteopaths & chiropractors	F	62.2
Engineers, mechanical	M	72.6	School teachers	M	62.2
Professors	M	72.0	Librarians	M	62.0
Stock & bond brokers	M	70.9	Accountants & auditors	M	61.8
Veterinarians	M	69.8	Authors, editors & journalists	F	61.4
Business service officers	M	69.5	Clergymen	M	61.0
Statisticians	M	68.8	Designers, clothing	M	60.6
Mining managers	M	67.9	Gov't, service officials	M	60.6
Finance managers	M	67.7	Transportation managers	M	60.1
Osteopaths & chiropractors	M	67.3	Farmers	F	59.4
Dietitians	F	67.0	Community service workers	F	59.1
Professors	F	66.7			
Chemists & metallurgists	M	65.8			
Officers, armed forces	M	65.1			
Air pilots	M	65.0			
Chemists & metallurgists	F	64.8			



Occupation	Sex	Score	Occupation	Sex	Score
Dispatchers, train	M	58.5	Office appliance operators	F	53.6
Designers, cloth	F	58.2	Teachers N.E.S.	M	53.4
Insurance agents	M	58.2	Retail trade managers	F	53.3
Foremen, communication	M	58.1	Telegraph operators	F	52.9
Advertising agents	M	58.0	Foremen, mining	M	52.8
Managers N.E.S.	M	57.7	Window-decorators	F	52.3
School teachers	F	57.6	Nurses, graduate	M	52.2
Artists & teachers of art	M	57.6	Actors	M	52.1
Nurses, graduate	F	57.4	Stenographers	M	52.0
Real estate agents & dealers	M	57.0			
Social welfare workers	M	57.0	<u>Class 4</u>		
Retail trade managers	M	57.0	Book-keepers & cashiers	F	51.9
			Forewomen, communication		51.8
<u>Class 3</u>			Foremen, manufacturing	M	51.8
Actors	F	56.9	Photographers	M	51.8
Commercial travellers	M	56.7	Inspectors, construction	M	51.7
Advertising agents	F	56.6	Window-decorators	M	51.6
Forestry managers	M	56.5	Telegraph operators	M	51.6
Artists, commercial	F	56.4	Petroleum refiners	M	51.6
Radio announcers	M	56.4	Toolmakers	M	51.6
Laboratory technicians			Engravers, except photo-engravers	M	51.4
N.E.S.	F	56.0	Undertakers	M	51.3
Artists, commercial	M	56.0	Office clerks	F	51.2
Draughtsmen	M	56.0	Locomotive firemen	M	51.2
Brokers, agents & appraisers	M	56.0	Book-keepers & cashiers	M	51.2
Inspectors, communication		55.0	Brakemen, railway	M	51.1
Artists & teachers of art	F	55.0	Power station operators	M	51.0
Surveyors	M	55.0	Office appliance operators	M	51.0
Recreation service officers	M	54.8	Doctor, dentist attendants	F	50.8
Purchasing agents	M	54.8	Motion picture projectionists	M	50.8
Agents, ticket station	M	54.3	Radio repairmen	M	50.8
Laboratory technicians			Captains, mates, pilots	M	50.7
N.E.S.	M	54.2	Foremen		
Stenographers & typists	F	54.1	transportation	M	50.7
Conductors, railway	M	54.1	Foremen, commercial	M	50.6
Radio operators	M	54.0	Personal service officers	M	50.5
Locomotive engineers	M	54.0			
Photo-engravers	M	54.0			
Music teachers	M	53.7			
Teachers N.E.S.	F	53.6			







Occupation	Sex	Score	Occupation	Sex	Score
<u>Class 5</u>					
Patternmakers	M	50.4	Knitters	M	46.3
Compositors	M	50.4	Wood inspectors	M	46.3
Inspectors, metal	M	50.4	Barbers	F	46.2
Paper-makers	M	50.4	Milliners	F	46.2
Photographers	F	50.2	Tobacco products		
Policemen	M	50.2	workers	F	46.2
Office clerks	M	50.2	Furnacemen	M	46.2
Mechanics, airplane	M	50.1	Furriers	M	46.2
Inspectors, metal			Brothers	M	46.1
products	F	50.0	Paper box makers	M	46.1
Music teachers	F	50.0	Other bookbinding		
Firemen, fire depart-			workers N.E.S.	F	46.0
ment	M	49.8	Coremakers	M	46.0
Pressmen & plate print-			Vulcanizers	M	46.0
ers	M	49.8	Liquor & beverage		
Telephone operators	F	49.6	Makers	M	46.0
Electricians	M	49.6	Postmen	M	45.9
Machinists, metal	M	49.6	Meat canners	F	45.9
Linemen & servicemen	M	49.6	Other upholstering		
Engineering officers			workers N.E.S.	F	45.8
(on ships)	M	49.4	Bookbinders	F	45.8
Baggagemen	M	49.4	Transportation, storage		
Transportation inspec-			communication workers	F	45.8
tors	M	49.4	Polishers, metal	M	45.8
Rolling millmen	M	49.4	Furriers	F	45.6
Auctioneers	M	49.3	Structural iron		
Inspectors & graders	M	49.2	workers	M	45.6
Farmers	M	49.2	Mechanics, motor	M	45.6
Photographic occupations			Textile inspectors	M	45.6
N.E.S.	M	49.2	Cabinet & furniture		
Collectors	M	49.1	makers	M	45.5
Dental mechanics	M	49.1	Loom fixers	M	45.5
Sulphite cookers	M	49.0	Weavers, textile	F	45.4
Wire drawers	M	46.9	Butchers	M	45.4
Other ranks, armed			Miners	M	45.4
forces	M	46.8	Assemblers, electrical		
Electroplaters	M	46.8	equipment	F	48.9
Plumbers	M	46.8	Operators, electric		
Motormen	M	46.7	street railway	M	48.8
Quarriers	M	46.6	Stationary engineers	M	48.7
Machine operators,			Bookbinders	M	48.6
metal	M	46.5	Tire & tube builders	F	48.4
Paint makers	M	46.4	Canvassers	M	48.2
Filers	M	46.4	Telephone operators	M	48.2
Upholsterers	M	46.3	Switchmen & signalmen	M	48.2
			Opticians	M	48.2



Occupation	Sex	Score	Occupation	Sex	Score
Jewellers & watch-makers	M	48.2	<u>Class 6</u>		
Personal service worker	F	48.1	Winders & warpers	F	45.0
Assemblers, electrical equipment	M	48.1	Carders & drawing frame workers	F	45.0
Tire & tube builders	M	48.1	Sales clerks	F	45.0
Millwrights	M	48.0	Moulders, metal	M	45.0
Religious workers N.E.S.	M	48.0	Nurses, practical	M	45.0
Fitters, metal	F	47.9	Cutters, textile goods	F	44.9
Milliners	M	47.8	Elevator tenders	F	44.8
Construction foremen	M	47.7	Tailloresses	F	44.8
Opticians	F	47.6	Textile inspectors	F	44.8
Bus drivers	M	47.6	Potmen	M	44.8
Heat treaters	M	47.6	Timbermen	M	44.7
Religious workers N.E.S.	F	47.5	Prospectors	M	44.7
Photographic workers N.E.S.	F	47.4	Oilers, power plant	M	44.7
Machine operators, metal	F	47.4	Liquor & beverage workers	F	44.6
Boilermakers	M	47.3	Paper box makers	F	44.6
Jewellers & watchmakers	F	47.2	Kiln burners	M	44.6
Other bookbinding workers N.E.S.	M	47.2	Brick & stone masons	M	44.6
Sales clerks	M	47.2	Construction machine operators	M	44.5
Hoistmen, cranemen	M	47.2	Canvassers	F	44.4
Welders	M	47.2	Service station attendants	M	44.4
Mechanics, N.E.S.	M	47.2	Painters & decorators	M	44.4
Mechanics, railroad	M	47.2	Hat & cap makers	M	44.4
Fitters, metal	M	47.2	Bleachers & dyers	M	44.4
Cutters, textile goods	M	47.2	Spinners & twistors	F	44.3
Millmen	M	47.2	Rubber shoe makers	F	44.2
Wire drawers	F	47.1	Porters	M	44.2
Core makers	F	47.1	Tobacco products workers	M	44.2
Riggers	M	47.1	Millers	M	44.2
Sheetmetal workers	M	47.1	Nurses, practical	F	44.1
Shipping clerks	M	47.0	Finishers, textile	F	44.0
Logging foremen	M	45.4	Blacksmiths	M	44.0
Labellers	M	45.3	Tailors	M	44.0
Nurses, in training	F	45.2	Bakers	M	43.8
Meat canners	M	45.2	Weavers	M	43.8
Farm managers	M	45.2	Rubber shoe makers	M	43.8
Plasterers	M	45.2	Labellers	F	43.7
Textile inspectors	M	45.1	Other personal service workers	F	43.6
Other pulp & paper workers	F	45.1			











Occupation	Sex	Score
Fish canners, curers & packers	M	36.2
Fish canners, curers & packers	F	36.0
Hunters & trappers	M	32.0

N.E.S. ... not elsewhere specified.



## APPENDIX D





# OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

By ARTHUR S. OTIS, PH.D.

Formerly Development Specialist with Advisory Board, General Staff, United States War Department

## INTERMEDIATE EXAMINATION: FORM A

For Grades 4-9

20

Score.....

*Read this page. Do what it tells you to do.*

*Do not open this paper*, or turn it over, until you are told to do so. Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name.....Age last birthday.....years  
First name, initial, and last name

Birthday.....Teacher.....Date..... 19....  
Month Day

Grade.....School.....City.....

This is a test to see how well you can think. It contains questions of different kinds. Here is a sample question already answered correctly. Notice how the question is answered:

*Sample:* Which one of the five words below tells what an apple is?

1 flower, 2 tree, 3 vegetable, 4 fruit, 5 animal..... ( 4 )

The right answer, of course, is "fruit"; so the word "fruit" is underlined. And the word "fruit" is No. 4; so a figure 4 is placed in the parentheses at the end of the dotted line. This is the way you are to answer the questions.

Try this sample question yourself. Do not write the answer; just draw a line under it and then put its number in the parentheses:

*Sample:* Which one of the five things below is round?

1 a book, 2 a brick, 3 a ball, 4 a house, 5 a box.....( )

The answer, of course, is "a ball"; so you should have drawn a line under the words "a ball" and put a figure 3 in the parentheses. Try this one:

*Sample:* A foot is to a man and a paw is to a cat the same as a hoof is to a — what?

1 dog, 2 horse, 3 shoe, 4 blacksmith, 5 saddle.....( )

The answer, of course, is "horse"; so you should have drawn a line under the word "horse" and put a figure 2 in the parentheses. Try this one:

*Sample:* At four cents each, how many cents will 6 pencils cost?.....( )

The answer, of course, is 24, and there is nothing to underline; so just put the 24 in the parentheses.

If the answer to any question is a number or a letter, put the number or letter in the parentheses without underlining anything. Make all letters like printed capitals.

The test contains 75 questions. You are not expected to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to begin. Try to get as many right as possible. Be careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No questions about the test will be answered by the examiner after the test begins. Lay your pencil down.

*Do not turn this page until you are told to begin.*

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## EXAMINATION BEGINS HERE.

1. Which one of the five things below does not belong with the others? (Do not write on these dotted lines.) ( )  
1 potato, 2 turnip, 3 carrot, 4 stone, 5 onion.....
2. Which one of the five words below tells best what a saw is? ( )  
1 something, 2 tool, 3 furniture, 4 wood, 5 machine.....
3. Which one of the five words below means the opposite of west? ( )  
1 north, 2 south, 3 east, 4 equator, 5 sunset.....
4. A hat is to a head and a glove is to a hand the same as a shoe is to what? ( )  
1 leather, 2 a foot, 3 a shoestring, 4 walk, 5 a toe.....
5. A child who knows he is guilty of doing wrong should feel (?) ( )  
1 bad, 2 sick, 3 better, 4 afraid, 5 ashamed.....
6. Which one of the five things below is the smallest? ( )  
1 twig, 2 limb, 3 bud, 4 tree, 5 branch.....
7. Which one of the five things below is most like these three: cup, plate, saucer? ( )  
1 fork, 2 table, 3 eat, 4 bowl, 5 spoon.....
8. Which of the five words below means the opposite of strong? ( )  
1 man, 2 weak, 3 small, 4 short, 5 thin.....
9. A finger is to a hand the same as a toe is to what? ( )  
1 foot, 2 toenail, 3 heel, 4 shoe, 5 knee.....
10. Which word means the opposite of sorrow? ( )  
1 sickness, 2 health, 3 good, 4 joy, 5 pride.....
11. Which one of the ten numbers below is the smallest? (Tell by letter.) ( )  
A 6084, B 5160, C 4342, D 6521, E 9703, F 4296, G 7475, H 2657, J 8839, K 3918
12. Which word means the opposite of pretty? ( )  
1 good, 2 ugly, 3 bad, 4 crooked, 5 nice.....
13. Do what this mixed-up sentence tells you to do. ( )  
number Write the the in 5 parentheses.....
14. If we believe some one has committed a crime, but we are not sure, we have a (?) ( )  
1 fear, 2 suspicion, 3 wonder, 4 confidence, 5 doubtful.....
15. A book is to an author as a statue is to (?) ( )  
1 sculptor, 2 marble, 3 model, 4 magazine, 5 man.....
16. Which is the most important reason that words in the dictionary are arranged alphabetically? ( )  
1 That is the easiest way to arrange them. 2 It puts the shortest words first. 3 It enables us to find any word quickly. 4 It is merely a custom. 5 It makes the printing easier ..
17. Which one of the five things below is most like these three: plum, apricot, apple? ( )  
1 tree, 2 seed, 3 peach, 4 juice, 5 ripe.....
18. At 4 cents each, how many pencils can be bought for 36 cents? ( )
19. If a person walking in a quiet place suddenly hears a loud sound, he is likely to be (?) ( )  
1 stopped, 2 struck, 3 startled, 4 made deaf, 5 angered.....
20. A boy is to a man as a (?) is to a sheep. ( )  
1 wool, 2 lamb, 3 goat, 4 shepherd, 5 dog.....
21. One number is wrong in the following series. What should that number be? (Just write the correct number in the parentheses.) ( )  
1 6 2 6 3 6 4 6 5 6 7 6.....
22. Which of the five things below is most like these three: horse, pigeon, cricket? ( )  
1 stall, 2 saddle, 3 eat, 4 goat, 5 chirp.....
23. If the words below were rearranged to make a good sentence, with what letter would the last word of the sentence begin? (Make the letter like a printed capital.) ( )  
nuts from squirrels trees the gather.....
24. A man who betrays his country is called a (?) ( )  
1 thief, 2 traitor, 3 enemy, 4 coward, 5 slacker.....
25. Food is to the body as (?) is to an engine. ( )  
1 wheels, 2 fuel, 3 smoke, 4 motion, 5 fire.....
26. Which tells best just what a pitcher is? ( )  
1 a vessel from which to pour liquid, 2 something to hold milk, 3 It has a handle, 4 It goes on the table, 5 It is easily broken.....

*Do not stop. Go on with the next page.*



27. If George is older than Frank, and Frank is older than James, then George is (?) James.  
1 older than, 2 younger than, 3 just as old as, 4 (cannot say which)..... ( )
28. Count each 7 below that has a 5 next after it. Tell how many 7's you count.  
7 5 3 0 9 7 3 7 8 5 7 4 2 1 7 5 7 3 2 4 7 0 9 3 7 5 5 7 2 3 5 7 7 5 4 7..... ( )
29. If the words below were rearranged to make a good sentence, with what letter would the last word of the sentence begin? (Make the letter like a printed capital.)  
leather shoes usually made are of..... ( )
30. An electric light is to a candle as a motorcycle is to (?)  
1 bicycle, 2 automobile, 3 wheels, 4 speed, 5 police..... ( )
31. Which one of the words below would come first in the dictionary?  
1 march, 2 ocean, 3 horse, 4 paint, 5 elbow, 6 night, 7 flown..... ( )
32. The daughter of my mother's brother is my (?)  
1 sister, 2 niece, 3 cousin, 4 aunt, 5 granddaughter..... ( )
33. One number is wrong in the following series. What should that number be?  
3 4 5 4 3 4 5 4 3 5..... ( )
34. Which of the five things below is most like these three: boat, horse, train?  
1 sail, 2 row, 3 motorcycle, 4 move, 5 track..... ( )
35. If Paul is taller than Herbert and Paul is shorter than Robert, then Robert is (?) Herbert.  
1 taller than, 2 shorter than, 3 just as tall as, 4 (cannot say which)..... ( )
36. What is the most important reason that we use clocks?  
1 to wake us up in the morning, 2 to regulate our daily lives, 3 to help us catch trains,  
4 so that children will get to school on time, 5 They are ornamental..... ( )
37. A coin made by an individual and meant to look like one made by the government is called(?)  
1 duplicate, 2 counterfeit, 3 imitation, 4 forgery, 5 libel..... ( )
38. A wire is to electricity as (?) is to gas.  
1 a flame, 2 a spark, 3 hot, 4 a pipe, 5 a stove..... ( )
39. If the following words were arranged in order, with what letter would the middle word begin?  
Yard Inch Mile Foot Rod..... ( )
40. One number is wrong in the following series. What should that number be?  
5 10 15 20 25 29 35 40 45 50..... ( )
41. Which word means the opposite of truth?  
1 cheat, 2 rob, 3 liar, 4 ignorance, 5 falsehood..... ( )
42. Order is to confusion as (?) is to war.  
1 guns, 2 peace, 3 powder, 4 thunder, 5 army..... ( )
43. In a foreign language, good food = Bano Naab  
good water = Heto Naab  
The word that means *good* begins with what letter?..... ( )
44. The feeling of a man for his children is usually (?)  
1 affection, 2 contempt, 3 joy, 4 pity, 5 reverence..... ( )
45. Which of the five things below is most like these three: stocking, flag, sail?  
1 shoe, 2 ship, 3 staff, 4 towel, 5 wash..... ( )
46. A book is to information as (?) is to money.  
1 paper, 2 dollars, 3 bank, 4 work, 5 gold..... ( )
47. If Harry is taller than William, and William is just as tall as Charles, then Charles is (?) Harry.  
1 taller than, 2 shorter than, 3 just as tall as, 4 (cannot say which)..... ( )
48. If the following words were arranged in order, with what letter would the middle word begin?  
Six Ten Two Eight Four..... ( )
49. If the words below were rearranged to make a good sentence, with what letter would the third word of the sentence begin? (Make the letter like a printed capital.)  
men high the a wall built stone..... ( )
50. If the suffering of another makes us suffer also, we feel (?)  
1 worse, 2 harmony, 3 sympathy, 4 love, 5 repelled..... ( )
51. In a foreign language, grass = Moki  
green grass = Moki Laap  
The word that means *green* begins with what letter?..... ( )

*Do not stop. Go on with the next page.*

52. If a man has walked west from his home 9 blocks and then walked east 4 blocks, how many blocks is he from his home?..... ( )
53. A pitcher is to milk as (?) is to flowers.  
1 stem, 2 leaves, 3 water, 4 vase, 5 roots..... ( )
54. Do what this mixed-up sentence tells you to do.  
sum three Write two the four and of..... ( )
55. There is a saying, "Don't count your chickens before they are hatched." This means (?)  
1 Don't hurry. 2 Don't be too sure of the future. 3 Haste makes waste. 4 Don't gamble ..... ( )
56. Which statement tells best just what a fork is?  
1 a thing to carry food to the mouth, 2 It goes with a knife, 3 an instrument with prongs at the end, 4 It goes on the table, 5 It is made of silver..... ( )
57. Wood is to a table as (?) is to a knife.  
1 cutting, 2 chair, 3 fork, 4 steel, 5 handle..... ( )
58. Do what this mixed-up sentence tells you to do.  
sentence the letter Write last this in..... ( )
59. Which one of the words below would come last in the dictionary?  
1 alike, 2 admit, 3 amount, 4 across, 5 after, 6 amuse, 7 adult, 8 affect ( )
60. There is a saying, "He that scatters thorns, let him go barefoot." This means (?)  
1 Let him who causes others discomforts bear them himself also. 2 Going barefoot toughens the feet. 3 People should pick up what they scatter. 4 Don't scatter things around..... ( )
61. If the following words were arranged in order, with what letter would the middle word begin?  
Plaster Frame Wallpaper Lath Foundation..... ( )
62. In a foreign language,  
many boys = Boka Hepo  
many girls = Marti Hepo  
many boys and girls = Boka Ello Marti Hepo  
The word that means *and* begins with what letter?..... ( )
63. A statement which expresses just the opposite of that which another statement expresses is said to be a (?)  
1 lie, 2 contradiction, 3 falsehood, 4 correction, 5 explanation..... ( )
64. There is a saying, "Don't look a gift horse in the mouth." This means (?)  
1 It is not safe to look into the mouth of a horse. 2 Although you question the value of a gift, accept it graciously. 3 Don't accept a horse as a gift. 4 You cannot judge the age of a gift horse by his teeth..... ( )
65. Which one of the words below would come last in the dictionary?  
1 hedge, 2 glory, 3 label, 4 green, 5 linen, 6 knife, 7 honor..... ( )
66. Which statement tells best just what a watch is?  
1 It ticks, 2 something to tell time, 3 a small, round object with a chain, 4 a vest-pocket-sized time-keeping instrument, 5 something with a face and hands..... ( )
67. Ice is to water as water is to what?  
1 land, 2 steam, 3 cold, 4 river, 5 thirst..... ( )
68. Which statement tells best just what a window is?  
1 something to see through, 2 a glass door, 3 a frame with a glass in it, 4 a glass opening in the wall of a house, 5 a piece of glass surrounded by wood..... ( )
69. Which of the five words below is most like these three: large, red, good?  
1 heavy, 2 size, 3 color, 4 apple, 5 very..... ( )
70. Write the letter that follows the letter that comes next after M in the alphabet ..... ( )
71. One number is wrong in the following series. What should that number be?  
1 2 4 8 16 24 64 ..... ( )
72. An uncle is to an aunt as a son is to a (?)  
1 brother, 2 daughter, 3 sister, 4 father, 5 girl..... ( )
73. If I have a large box with 3 small boxes in it and 4 very small boxes in each of the small boxes, how many boxes are there in all?..... ( )
74. One number is wrong in the following series. What should that number be?  
1 2 4 5 7 8 10 11 12 14..... ( )
75. There is a saying, "Don't ride a free horse to death." This means (?)  
1 Don't be cruel. 2 Don't abuse a privilege. 3 Don't accept gifts. 4 Don't be reckless. ( )

*If you finish before the time is up, go back and make sure that every answer is right.*

## APPENDIX E





EDMONTON SEPARATE SCHOOLS

Arithmetic Test Form II  
Part I Reasoning

PUPIL'S NAME \_\_\_\_\_

SCORE \_\_\_\_\_

\*\*\*\*\*

2 marks each ( 1 for work showing correct reasoning - 1 for correct answer.  
Do not penalize if answer is not transferred correctly.)

TEACHER - Please read instruction with class.

I will explain the problem to you. You will work the other problems by yourself.  
No questions may be asked after you begin your test. You are not expected to do all of  
the problems but do as many as you can. You must show how you got your answer in the  
work space.

<p>SAMPLE: John has 4 red marbles and 3 blue marbles. How many marbles has John?</p> <p>Answer <u>7</u> marbles</p>	<p>Work</p> $\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array}$
<p>1. Mary saw 11 red birds. She saw 6 blue birds. How many more red birds did she see than blue birds?</p> <p>Answer _____ more</p>	<p>Work</p>
<p>2. In three turns at darts, Joe made 9 points, 7 points and 6 points. In all how many points did he make in these three turns?</p> <p>Answer _____ points</p>	<p>Work</p>
<p>3. John spent \$2.25 for a toy airplane. Mary spent \$1.25 for a doll. How much more money did John spend than Mary?</p> <p>Answer _____ more</p>	<p>Work</p>
<p>4. One week Art counted 84 flocks of ducks flying south and Earl counted 105 flocks. How many fewer flocks did Art count than Earl?</p> <p>Answer _____ fewer</p>	<p>Work</p>



<p>5. There are 16 boys and 24 girls in Miss Allen's class. All the boys and <math>\frac{1}{2}</math> of the girls took part in a school program. How many children from Miss Allen's class took part?</p> <p>Answer _____ children</p>	Work
<p>6. The swimming pool at Park School is 60 feet long and 30 feet wide. Jim swims all the way around it once each day. How far does he swim in going around the pool?</p> <p>Answer _____ feet</p>	Work
<p>7. Mrs. Nester bought some nuts for Jane's birthday party. She bought <math>1\frac{1}{4}</math> lb. of peanuts, 1 lb. of walnuts and <math>\frac{5}{8}</math> lb. of pecans. Ella used <math>1\frac{3}{4}</math> lb. of the nuts to fill nut cups. How many pounds of nuts were left?</p> <p>Answer _____ lb. were left.</p>	Work
<p>8. Mr. Brown figures that he burns an average of <math>1\frac{3}{10}</math> tons of coal a week, during the very cold weather. How much coal should he order for 20 weeks of cold weather?</p> <p>Answer _____ tons</p>	Work
<p>9. A flock of sheep has 15 black sheep. If there is one black sheep in each 100 sheep, how many sheep are there in the flock?</p> <p>Answer _____ sheep</p>	Work
<p>10. There are 36 pupils in the grade six class. On Monday 25% of the class was absent due to flu. How many pupils were present?</p> <p>Answer _____ pupils</p>	Work





# EDMONTON SEPARATE SCHOOLS

## Arithmetic Test Form II Part II Problems

PUPIL'S NAME \_\_\_\_\_

SCORE \_\_\_\_\_

\*\*\*\*\*

Problems to be answered in short form - 1 mark each

1. Mother made 3 big cakes and 2 little cakes. How many cakes did Mother make? \_\_\_\_\_ cake
2. Tom has 7 books. Mary has 3 books. How many more books has Tom than Mary? \_\_\_\_\_ books
3. Six girls were skating. Three more girls came and began to skate. How many girls were skating then? \_\_\_\_\_ girls
4. Father drives 9 miles each day. How many miles will he drive in 2 days? \_\_\_\_\_ miles
5. Mark is 14 years old and Sam is 8 years old. What is the difference in their ages? \_\_\_\_\_ years
6. Tom made 8 points and 9 points in a bean-bag game. What was his score? \_\_\_\_\_ points
7. Joe has 15 cents and I have 10 cents. How many cents less than Joe do I have? \_\_\_\_\_ cents
8. Aunt Mary promised to give Jane \$1.25 each month for a year if she would save at least  $\frac{1}{5}$  of it. How much would she have to save each month? \$ \_\_\_\_\_
9. Tom missed the target with the first three arrows. Then he hit 3, 1, 3, 3, 5, 3, and 3. What was Tom's average score? \_\_\_\_\_
10. Mary has read 105 pages in a story book. This is 55 fewer pages than John has read. How many pages has John read? \_\_\_\_\_ pages
11. Ed put up 425 pounds of clover seed in 5-pound bags for the Capital Seed Store. How many bags of seed did he put up for the store? \_\_\_\_\_ bags



12. Nine boys in a hobby club wanted to buy a fish tank. Each boy saves 3¢ a week for 12 weeks. How much money had they saved at the end of 12 weeks? \_\_\_\_\_
13. In olden days children came to school in the morning at 7 o'clock and stayed for 4 hours. They returned in the afternoon at 1 o'clock and stayed until 4. For how many hours a day were they in school? \_\_\_\_\_ hours
14. Dan made 2 dog collars. He used  $1\frac{1}{2}$  yd. of leather for one of them and  $\frac{3}{8}$  yd. for the other. How much leather did he use for both? \_\_\_\_\_ yds.
15. Jack has 34 marbles. Bill has  $1\frac{1}{4}$  doz. fewer than Jack. How many marbles does Bill have? \_\_\_\_\_ marbles
16. Bill was  $59\frac{1}{4}$ " tall last fall. He has grown  $1\frac{3}{4}$ " since then. Paul was  $60\frac{1}{8}$ " tall last fall. He has grown  $\frac{3}{4}$ " since then. Who is the taller now? How much taller is he? \_\_\_\_\_ by \_\_\_\_\_ inches
17. In the United States, the volume of a gallon of gasoline is 231 cubic inches. In Canada it is 277.42 cu. in. Compare the volume of the United States gallon with that of the Canadian gallon by finding the difference. \_\_\_\_\_ cu.in
18. Mr. Thomas is planning to put a fence around his rectangular pasture which is 1.1 miles long and 0.3 miles wide. He will need 330 posts per mile for the fence. How many posts will he need? \_\_\_\_\_ posts
19. Write the number which is 1 hundredth less than 2.175 \_\_\_\_\_
20. Write the fraction which compares the perimeter with the area of a rectangle 8 in. long and 4 in. wide. \_\_\_\_\_



EDMONTON SEPARATE SCHOOLS

Arithmetic Test Form II  
Part III Measurement and Number Concepts

PUPIL'S NAME \_\_\_\_\_

SCORE \_\_\_\_\_

\*\*\*\*\*

Fill in the blanks. 1 mark each

1. What time does each clock say?



\_\_\_\_\_

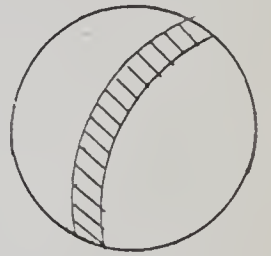
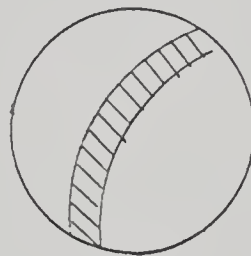
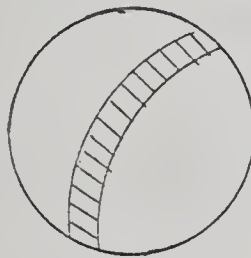
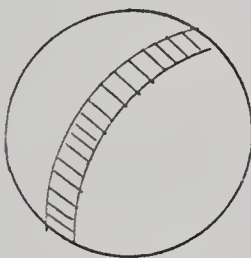


\_\_\_\_\_



\_\_\_\_\_

2. Draw a ring around the first ball.



3. If a pie is cut into thirds how many pieces will there be? \_\_\_\_\_

4. There are \_\_\_\_\_ quarters in one-half dollar.

5. 9 yards = \_\_\_\_\_ feet.

6.  $2\frac{1}{4}$  dozen eggs is the same as \_\_\_\_\_ eggs.

7.  $1\frac{1}{2}$  pounds equal \_\_\_\_\_ ounces.

8. 36 ft. = \_\_\_\_\_ yd.





9. 9 ft. 8 in. = \_\_\_\_\_ in.
10. Write the Roman numeral XIV in figures. \_\_\_\_\_
11. In the years 1959 and 1960 there were \_\_\_\_\_ days.
12.  $9\frac{1}{2}$  T. = \_\_\_\_\_ lb.
13. 4 mi. = \_\_\_\_\_ ft.
14. 30 gallons = \_\_\_\_\_ pints.
15. One-half section of land contains \_\_\_\_\_ acres.
16. Write in Roman numerals 1959 \_\_\_\_\_.
17. Write three thousandths using decimals. \_\_\_\_\_
18. Write in figures fifteen billion, thirty-three million, four thousand, sixty-six.  
\_\_\_\_\_
19. 5 square feet = \_\_\_\_\_ sq. in.
20. John got 94% on a spelling test of 50 words. He had \_\_\_\_\_ errors.



EDMONTON SEPARATE SCHOOLS  
Arithmetic Test Form II  
Part IV Computation

PUPIL'S NAME \_\_\_\_\_

SCORE \_\_\_\_\_

1 mark each Copy answers in column at right.

		Sample A 3 <u>+2</u>	Sample B 7 <u>-4</u>	Answer A _____ B _____
1. 3 <u>+ 5</u>	2. 2 <u>+7</u>	3. 8 <u>- 6</u>	4. 7 <u>- 3</u>	1. _____ 2. _____ 3. _____ 4. _____
5. add 14 <u>32</u>	6. 43 <u>+ 76</u>	7. subtract 93 <u>21</u>	8. 68 <u>-19</u>	5. _____ 6. _____ 7. _____ 8. _____
9. 8 6 2 <u>3</u>	10. 538 <u>-217</u>	11. add 36 27 <u>82</u>	12. subtract 493 <u>25</u>	9. _____ 10. _____ 11. _____ 12. _____
13. 902 <u>-284</u>	14. \$19.31 <u>+ 38.34</u>	15. 52 <u>x 4</u>	16. 3/ <u>63</u>	13. _____ 14. _____ 15. _____ 16. _____
17. 19 <u>x 6</u>	18. 5/ <u>305</u>	19. add \$53.71 14.36 <u>26.35</u>	20. \$87.93 <u>- 38.57</u>	17. _____ 18. _____ 19. _____ 20. _____





21. <div> 27  364  4761  <u>96</u> </div>	22. <div> 8300  - 798  <u>      </u> </div>	23. <div> 9/ <u>54189</u> </div>	24. <div> \$1.24  x 37  <u>      </u> </div>	21. _____ 22. _____ 23. _____ 24. _____
25. multiply <div> 207  <u>83</u> </div>	26. <div> 27/ <u>2 3 4 5</u> </div>	27. <div> 36 1/4  + 32 1/8  <u>      </u> </div>	28. <div> 45/ <u>2 9 7 0</u> </div>	25. _____ 26. _____ 27. _____ 28. _____
29. subtract <div> 9 3/10  <u>2 1/5</u> </div>	30. add <div> 9 1/3  3 2/9  <u>2/3</u> </div>	31. <div> 865 1/7  - 29 1/3  <u>      </u> </div>	32. <div> 3/8 x 4/9 </div>	29. _____ 30. _____ 31. _____ 32. _____
33. <div> 2 3/8  5 1/4  <u>9 1/6</u> </div>	34. <div> 27 ÷ 1 4/5 </div>	35. <div> .97 x 24.8 </div>	36. <div> 1 5/9 ÷ 7/8 </div>	33. _____ 34. _____ 35. _____ 36. _____
37. add <div> 3 ft. 5 in.  4 ft. 9 in.  <u>9 ft. 7 in.</u> </div>	38. <div> 5/9 of 27 </div>	39. <div> .28/ <u>92.4</u> </div>	40. <div> 8 ÷ .02 </div>	37. _____ 38. _____ 39. _____ 40. _____

Have you reduced all fractions to lowest term?  
Carefully recheck all your work.

TOTAL \_\_\_\_\_



EDMONTON SEPARATE SCHOOLS

LANGUAGE TEST--FORM II

Name of Pupil\_\_\_\_\_

Score\_\_\_\_\_

Value--100 marks

- (15) 1. Punctuate the following sentences correctly. ( $\frac{1}{2}$  mark each)

Example: Mother may I go  
Mother, may I go?

- (a) Isnt it raining outside
- (b) Spring summer autumn and winter are the four seasons of the year.
- (c) The rodeo began on July 21 1961
- (d) On our camping trip we took these items pots pans tent food.
- (e) The train departed at 7 15 P M on Tuesday.
- (f) The childs plaintive cry seemed to say Help help
- (g) Day in and day out the mailman made his rounds and everyday Henrys box was left empty
- (h) Why demanded Mother sternly have you tampered with my vacuum cleaner

- (10) 2. Draw rings around the letters that should be capitals. ( $\frac{1}{2}$  mark each)

Example: Today is Monday.

- (a) Last tuesday I had to take my doll to the doll doctor. She had been run over by a car, a big black ford. I asked dr. brown if susie were badly hurt. He said, "the doll will be as good as new."
- (b) This summer we took a trip east. We flew by trans canada airways, from Calgary, Alberta to Toronto, Ontario. From there, we motored to the united states for one week.
- (c) There are many indian boarding schools in british columbia. Many of them are very old, having been founded by the early missionaries. There, the Indian children are taught the fundamental principles of canadian living.
- (d) John is a roman catholic. He prays to God, the father almighty.

- (15) 3. Draw a line under the correct word found in parentheses.

Example: Mary (seen, saw) the bird.

- (a) Soon it will be (to, too) late.
- (b) They have (saw, seen) a gray donkey.



- (c) Those are (their, there) books.
- (d) They (did, done) their writing.
- (e) He hasn't (any, no) books.
- (f) (Don't, Doesn't) he know that man?
- (g) She was (chosen, choose) queen.
- (h) My father owns (these, those) two houses over there.
- (i) He divided the candy (between, among) the six children.
- (j) He has already (began, begun) to write.
- (k) She (sat, set) the dish on the table.
- (l) We have (took, taken) our books along.
- (m) She (lay, laid) the knife on the table.
- (n) (Whom, Who) did you call?
- (o) If you were (I, me) would you do it?

- (8) 4. Underline the word which is not spelled correctly. Write it correctly in the space provided.

Example:	set	say	saw	<u>siad</u>	<u>said</u>
(a) your	youre	you'll	yours	(a)	_____
(b) crys	dries	toys	wives	(b)	_____
(c) pansies	vallies	donkeys	files	(c)	_____
(d) watches	boys	calfs	rafts	(d)	_____
(e) moose	trouts	deer	caribou	(e)	_____
(f) heros	tomatoes	zeros	radios	(f)	_____
(g) piece	receipt	veil	recieving	(g)	_____
(h) noticeable	noticed	noticeing	notices	(h)	_____





This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

- (10) 6. In the space provided tell what part of speech the underlined word is.

Example: I drink milk.

verb

- (a) Ability is a poor man's wealth. (a) \_\_\_\_\_
- (b) Absence makes the heart grow fonder. (b) \_\_\_\_\_
- (c) Go slowly. (c) \_\_\_\_\_
- (d) Look before you leap. (d) \_\_\_\_\_
- (e) He did it without thinking. (e) \_\_\_\_\_
- (f) Both of the boys are coming. (f) \_\_\_\_\_
- (g) He likes beans, peas and cabbage. (g) \_\_\_\_\_
- (h) Mr. Smith, who lives across the street is ill. (h) \_\_\_\_\_
- (i) Ability involves responsibility. (i) \_\_\_\_\_
- (j) O, Absalom! how could you? (j) \_\_\_\_\_



- (6) 7. (a) Underline the complete subject and in the space provided write the simple subject.  
Example: The leaves are green in summer. leaves  
Into the roaring rapids the small boat lurched. \_\_\_\_\_
- (b) Underline the complete predicate and in the space provided write the simple predicate.  
Everywhere Linda had searched for the lost purse. \_\_\_\_\_
- (c) Underline the complete object and in the space provided write the simple object.  
Andrew bit his tongue to keep back the tears. \_\_\_\_\_
- (5) 8. In the space after each sentence name the tense of the verb in the sentence.
- (1) John will build a model ship. \_\_\_\_\_
- (2) Dick opened the window. \_\_\_\_\_
- (3) I did my homework. \_\_\_\_\_
- (4) We shop down town. \_\_\_\_\_
- (5) We will arrive home on Wednesday. \_\_\_\_\_
- (6) 9. Underline the correct ending and place the letter of that ending in the space provided.
- Example: A word that takes the place of a noun is called  
(a) an adverb (b) a pronoun (c) a verb b
- (1) Which of the following might be a proper adjective?  
(a) Canadian (b) Brown (c) good \_\_\_\_\_
- (2) An adverb which answers the question when or how is called an adverb of (a) place (b) time (c) manner \_\_\_\_\_
- (3) The word "herd" is called (a) an adjective  
(b) a proper noun (c) a collective noun \_\_\_\_\_
- (4) The gender of a noun such as "crowd" would be  
(a) masculine (b) feminine (c) neuter \_\_\_\_\_
- (5) In the sentence "Jane tore her skirt" the verb "tore" is in (a) active voice (b) passive voice \_\_\_\_\_
- (6) The verb in the following list which is irregular is (a) walk (b) run (c) open \_\_\_\_\_





- (10) 10. Underline the correct ending and place the letter of that ending in the space provided.  
Example: A group of words expressing a complete thought \_\_\_\_\_ b  
is called a (a) paragraph (b) sentence (c) book
- (1) The number of parts in a friendly letter is \_\_\_\_\_  
(a) five (b) nine (c) two
- (2) A sentence that gives a command is called a \_\_\_\_\_  
(a) demanding sentence (b) telling sentence  
(c) asking sentence
- (3) The group of words, "Before the moon rose over the dusky hills" (a) is a sentence (b) is not a sentence  
(c) is an exclamation \_\_\_\_\_
- (4) Another name for words that sound alike but have different meanings is (a) synonym (b) homonym (c) antonym \_\_\_\_\_
- (5) The sentence "Come here at once!" is (1) declarative  
(b) interrogative (c) imperative \_\_\_\_\_
- (6) In the sentence "He lives in the country.", the phrase "in the country" would be (1) a noun phrase  
(b) an adjective phrase (c) an adverb phrase \_\_\_\_\_
- (7) The exact words of the speaker are called  
(a) indirect quotation (b) direct quotation  
(c) direct address
- (8) The sentence "When I saw him coming, I turned to the left." is (a) a simple sentence (b) a compound sentence  
(c) a complex sentence \_\_\_\_\_
- (9) A term which expresses number is (a) tense (b) plural  
(c) colon \_\_\_\_\_
- (10) In the following sentence "Ted has John's car." the underlined word is in the (a) objective case  
(b) nominative case (c) possessive case \_\_\_\_\_
- (5) 11. These are a number of items concerning grammar in general. In the blank to the right place the correct answer.
- (1) What is the object of the preposition in the following sentence?  
The man for whom he worked paid him well. \_\_\_\_\_
- (2) What is the past participle of the verb "go"? \_\_\_\_\_
- (3) What is the subject of the verb in this sentence?  
Where are the boys? \_\_\_\_\_
- (4) What is the indirect object in this sentence?  
He showed me the way on the map. \_\_\_\_\_
- (5) What is the nominative case of the pronoun "us"? \_\_\_\_\_



EDMONTON SEPARATE SCHOOLS

ELEMENTARY SCIENCE---FORM II

Values

- (7) 1. Circle the answer that best completes each statement.
- (a) The sun rises in the east and sets in the (north, south, east, west).
  - (b) A thermometer tells us the (time, temperature, wind, pressure).
  - (c) The enemy of the forest which everyone can help to control is (fire, wind, rain, birds).
  - (d) A fish can live in the water because it has (fins, gills, lungs, scales).
  - (e) A Flashlight gets its electricity from (the bulb, the batteries, your hand, the sun).
  - (f) A mountain that boils up hot, fiery, melted rock is called a (geyser, hill, volcano, earthquake).
  - (g) Pasteurization makes our milk free of (weeds, butterfat, cream, germs).
- (7) 2. Fill in the blanks.
- (a) Stars differ in brightness and\_\_\_\_\_.
  - (b) The\_\_\_\_\_ gives us light and heat.
  - (c) Most birds build\_\_\_\_\_.
  - (d) Spring is one of the four\_\_\_\_\_ of the year.
  - (e) Baby frogs are called\_\_\_\_\_.
  - (f) A nutcracker is a kind of\_\_\_\_\_.
  - (g) A magnet has\_\_\_\_\_ poles.
- (5) 3. Matching--In front of each sentence write the number of the word at the right which best completes the sentence.
- |  |             |
|--|-------------|
| ____(a) The part of the plant that takes water out of the soil | 1. giraffe  |
| ____(b) The numerals on a thermometer show                     | 2. wind     |
| ____(c) Moving air is called                                   | 3. leaves   |
| ____(d) The tallest animal in the world                        | 4. clay     |
| ____(e) A type of soil which is sticky when it is wet          | 5. roots    |
|  | 6. sand     |
|  | 7. degrees  |
|  | 8. elephant |
|  | 9. moisture |

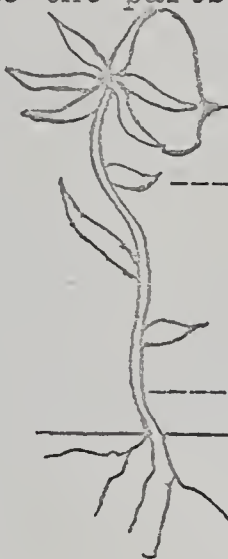


Values

- (1) 4. Complete the diagram below to show how the wires should be connected to make the light go on.



- (4) 5. Name the parts of the plant.



1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

6. If you place a jar over the candle so that the jar goes down into the water what will happen?

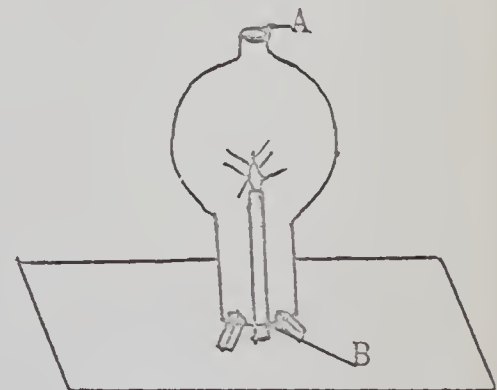


water

- (1) (a) The candle flame \_\_\_\_\_.
- (1) (b) The water in the dish \_\_\_\_\_.
- (2) (c) because \_\_\_\_\_.

7. Here is a burning candle inside a lamp chimney.

- (1) (a) Does air leave the lamp chimney at A or at B? \_\_\_\_\_
- (2) (b) Why \_\_\_\_\_.







Values

- (4) 8. (a) These sentences tell about an experiment. Number them in the correct order. (1,2,3,4)

\_\_\_\_\_ They placed the plants in the sunlight and watched them for several days.

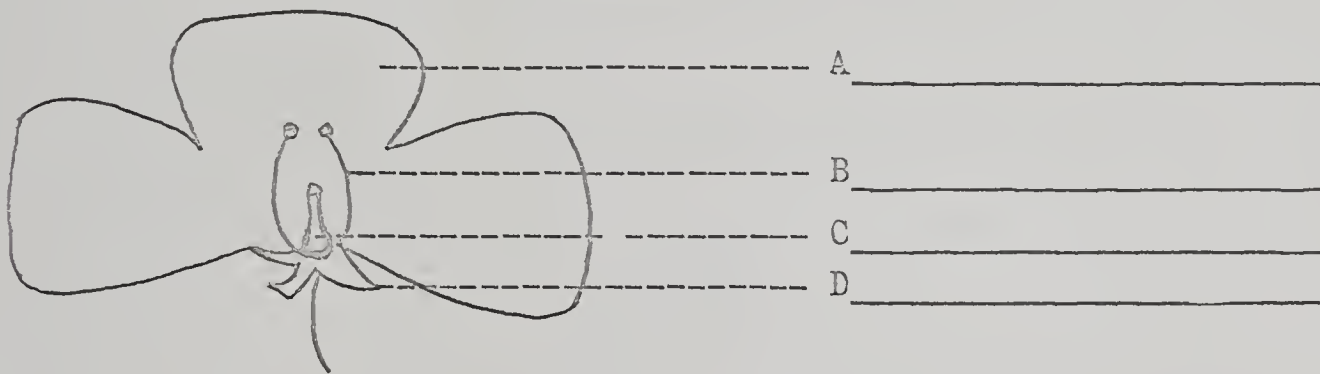
\_\_\_\_\_ They turned one of the plants half way around and watched them for several days.

\_\_\_\_\_ The children wanted to find out if the leaves of a plant would turn towards the light.

\_\_\_\_\_ They brought two plants to school.

- (2) (b) What do you think the children found out? \_\_\_\_\_

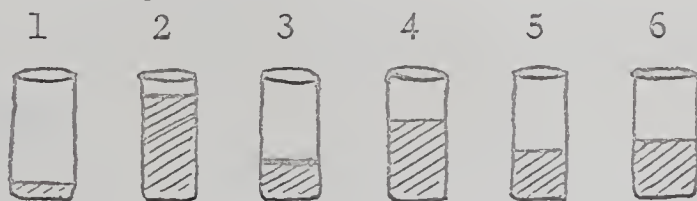
- (4) 9. Label the parts of the flower.



- (2) 10. Each glass has water in it to the height indicated. On being struck:

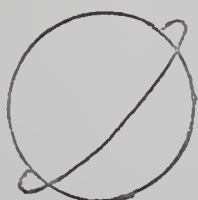
(a) Which one gives off the highest pitched sound? \_\_\_\_\_

(b) Which one gives off the lowest pitched sound? \_\_\_\_\_



- (1) 11. Draw a bar magnet and label the poles.

- (1) 12. The name of this planet is \_\_\_\_\_.



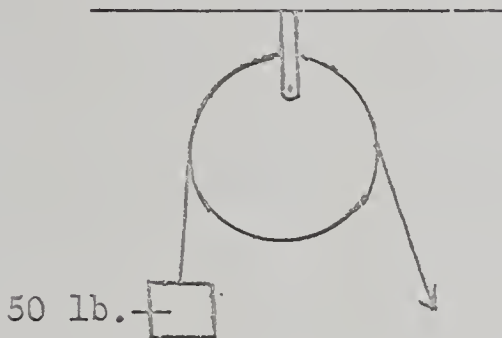


Values

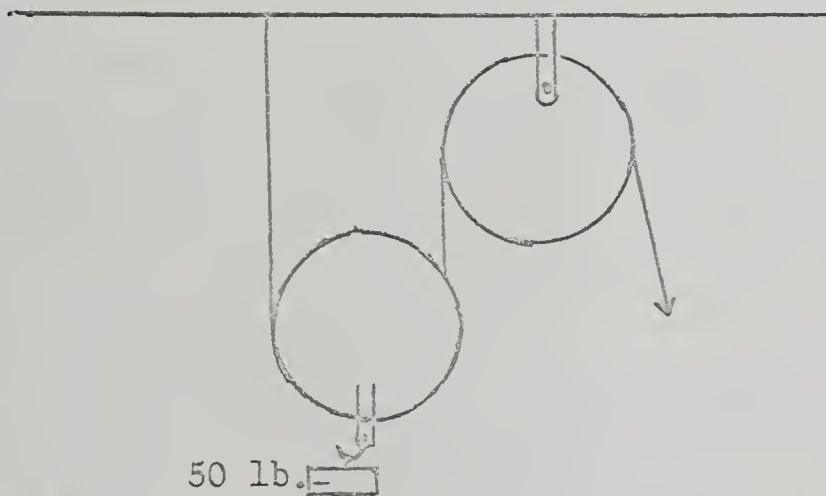
- (1) 13. This balloon with air escaping from the open end forcing the balloon in the opposite direction best describes the principle of the (balloon, airplane, jet, helicopter).



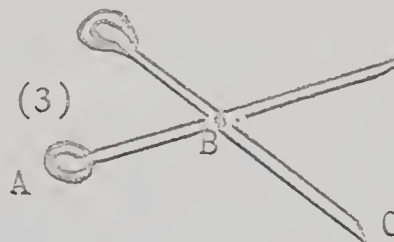
- (1) 14. To lift the 50 lb. weight the force must be \_\_\_\_\_ lb.



- (1) 15. To lift the 50 lb. weight the force must be \_\_\_\_\_ lb.



- (3) 16. Circle the letter which represents the fulcrum in the following levers.



- (1) 17. Finish the diagram showing how the image of the candle would appear on the screen.



candle



lens



screen





Values

(8) 18. Underline the answer that best completes each statement.

- (a) To do work, a person must have (a horse, a machine, a plant, energy).
- (b) An amphibian is (cold-blooded, warm-blooded, black-blooded, white-blooded).
- (c) Out of buds come (seeds, fruit, leaves, insects).
- (d) The sun and all the planets, moons and comets that travel around it are called (a galaxy, the universe, the solar system, the milky way).
- (e) An instrument that is used to study very small objects is a (telescope, microscope, barometer, thermometer).
- (f) The earth rotates on its axis once every (hour, day, week, year).
- (g) Electricity will flow through (copper, plastic, rubber, sulphur).
- (h) The branch of science which deals with the earth and what it is made of is called (Biology, Geology, Astronomy, Physics).

(8) 19. Fill in the blanks.

- (a) Ferns grow from\_\_\_\_\_.
- (b) Dry cell batteries provide\_\_\_\_\_ energy.
- (c) The path of a planet as it travels around the sun is called an\_\_\_\_\_.
- (d) To\_\_\_\_\_ means to stay asleep all winter.
- (e) When matter is heated, it will\_\_\_\_\_.
- (f) Light travels in\_\_\_\_\_ lines.
- (g) Things will not burn, unless\_\_\_\_\_ is present.
- (h) A plant or animal that lives on another living thing, taking its food from the thing it lives on is called a\_\_\_\_\_.

(10) 20. Complete these sentences by underlining one of the words.

- (a) A compass needle points (north, east, west).
- (b) Like poles of a magnet (attract, draw, repel) each other.



Values

- (c) Objects which weigh less than the water which they displace will (float, break, sink).
- (d) Mushrooms grow from (seeds, spores, slips).
- (e) Lightning is a form of (current, static, magnetic) electricity.
- (f) Molecules are (large, thick, small) particles of a substance.
- (g) The first day of spring is (March 21, April 21, May 21).
- (h) Water (expands, condenses, contracts) when it freezes.
- (i) The earth's only permanent satellite is (Mercury, Polaris, the Moon).
- (j) A plant commonly used in the manufacture of clothing is (wheat, oats, flax).

(10) 21. Matching--In front of each sentence write the number of the word at the right which best completes the sentence.

- |   |                   |
|---|-------------------|
| ____(a) A car engine uses this for energy.                            | 1. vertebrate     |
| ____(b) Organisms which cause many diseases                           | 2. bacteria       |
| ____(c) The part of the soil that is made up of decayed plants.       | 3. carbon dioxide |
| ____(d) A gas that makes up about 1/5 of the air                      | 4. cloud          |
| ____(e) A point on which something turns                              | 5. condense       |
| ____(f) An animal with a long row of bones along the back of the body | 6. evaporate      |
| ____(g) A material through which electricity will not flow            | 7. gasoline       |
| ____(h) A plant that is often seen growing on food                    | 8. humas          |
| ____(i) To change from a gas to a liquid                              | 9. insulator      |
| ____(j) The highness or lowness of a sound                            | 10. lever         |
|   | 11. mould         |
|   | 12. oil           |
|   | 13. oxygen        |
|   | 14. pitch         |
|   | 15. pivot         |
|   | 16. sand          |
|   | 17. conductor     |
|   | 18. intensity     |



## Values

(11) 22. An Experiment

We wish to find out if a liquid expands when it is heated. We will place an equal amount of cold colored water in two test tubes. We will use a bunsen burner and heat one of the test tubes containing the water. We will hold the test tube with a clamp so that we will not burn ourselves. When we place the test tubes side by side again we notice that the heated water has risen in the tube.

Write the above information in correct experimental form in the space below.





1. she	Will you get me a book?	she
2. said	The teacher said "Turn your backs away".	said
3. went	The boy went to the store.	went
4. down	The baby fell down.	down
5. put	I put the book on the shelf.	put
6. daddy	My daddy came.	daddy
7. over	The dog jumped over the box.	over
8. little	The flower is little.	little
9. pretty	She has a pretty dress.	pretty
10. coming	Are you coming with me?	coming
11. cannot	I cannot come with us.	cannot
12. fair	If the weather is fair we will go.	fair
13. because	Monkeys like to eat bananas.	because
14. received	He received a letter from his mother.	received
15. wrote	John wrote a letter to a friend.	wrote
16. used	We used all of the coloured paper.	used
17. stories	Father told us some stories about Norway.	stories
18. board	He stepped on the board.	board
19. caught	The policeman caught the thief.	caught
20. arithmetic	We have had some arithmetic problems.	arithmetic
21. address	What is your address?	address
22. February	February is the second month.	February
23. potatoes	He visited my grandfather.	potatoes
24. potatoes	I dislike cooked potatoes.	potatoes
25. thrifty	She is very thrifty with her money.	thrifty
26. farther	I am so tired I cannot go any farther.	farther
27. course	Of course I will go with you.	course
28. article	How much does this article cost?	article
29. pyjamas	I have a new pair of pyjamas.	pyjamas
30. avenue	There are many beautiful trees on the avenue.	avenue
31. begged	The dog begged for its food.	begged
32. division	He could not solve the division problem.	division
33. official	What was the official score?	official
34. penmanship	Mr. Johnson has improved his penmanship.	penmanship
35. beauty	This butterfly is very beautiful.	beauty
36. commerce	We studied some commerce with England.	commerce
37. physical	The physical education period is over.	physical
38. science	We completed our science experiment.	science
39. quiet	All was quiet after the explosion.	quiet
40. military	There was a military camp close by.	military
41. telegram	Mother signed for the telegram.	telegram
42. wound	Did he have any wound from the war?	wound
43. convenient	It is convenient for me to come on Monday.	convenient
44. artificial	Those are artificial flowers.	artificial
45. difference	There was a difference of opinion.	difference
46. mystery	He read the mystery novel.	mystery
47. pyramids	They studied the pyramids of Egypt.	pyramids
48. atmosphere	We wondered about the atmosphere on the moon.	atmosphere
49. gorgeous	She wore a gorgeous dress.	gorgeous
50. patient	The patient was very cooperative.	patient

TOTAL POSSIBLE SCORE = 100



# MEDIAN AND PERCENTILE NORMS OF ELEMENTARY STANDARDIZED TESTS

BASED ON JUNE, 1964 RESULTS

Per- centile	SPELLING					*ARITHMETIC						SCIENCE				LANGUAGE		
	2	3	4	5	6	1	2	3	4	5	6	3	4	5	6	4	5	6
95	61	78	89	97	99	99	98	97	89	96	98	59	74	88	93	69	79	87
90	50	71	85	94	98	98	97	94	88	91	96	56	69	84	89	66	76	81
80	42	63	78	88	95	95	93	89	85	86	92	49	63	78	86	58	71	78
70	36	58	73	84	93	94	90	86	81	81	89	46	59	74	82	56	68	75
60	31	53	68	80	90	91	86	83	78	77	86	43	56	69	79	53	64	72
50-med.	28	49	63	76	87	88	83	80	74	73	84	38	52	66	76	49	61	68
40	26	45	58	71	83	84	79	76	71	69	82	36	49	62	73	46	58	65
30	23	40	53	66	79	80	73	71	66	65	77	32	45	58	69	42	54	62
20	20	35	47	59	72	72	67	65	61	60	72	29	41	53	63	38	51	58
10	14	27	37	50	62	61	54	56	50	51	65	23	33	47	57	33	43	52
5	10	21	23	41	55	48	42	45	41	43	59	20	28	41	50	28	39	47
System Average	29	48	61	72	83	81	78	76	71	70	81	39	51	64	74	48	60	67

\*Arithmetic test norms for Grades I-V cannot be compared with those of previous years. These norms are for the new arithmetic tests.  
Raw scores are used in each case.

Grade six norms are based on a population of 1,582.

**INTERPRETATION:** Percentile norms, based on the pupils in the Edmonton Separate Schools provide a means of comparing a student's performance in any of the tests with the performance of other pupils in the Edmonton Separate Schools. The percentile rank of a certain student indicates the percentage of students who received a lower mark. For example: If a student in Grade 5 received a raw score of 83 in Spelling, this would place him beyond the 60%ile for Grade 5. This indicates that 60% of the pupils in Grade 5 received a lower raw score. It also follows that 40% of the pupils received better marks.

**USE:** To make test results more meaningful, it is suggested that teachers use the above table to convert raw scores into percentile norms. This will show each pupil's performance in comparison with other pupils of the same grade in the Edmonton Separate Schools.

**EXAMPLE (a Grade 5 Class):**

	RAW SCORE			PERCENTILE		
	Spelling	Arithmetic	Science	Spelling	Arithmetic	Science
John	90	78	80	80	60	80
Bernice	64	74	67	20	50	50
Bruce	68	69	62	30	40	40
Patricia	78	80	82	50	60	80







## APPENDIX F



# GATES READING SURVEY—FORM 2

For Grade 3 (Second Half) Through Grade 10

Speed and Accuracy, Reading Vocabulary, Level of Comprehension



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Write your name here.....

How old are you?.....When is your birthday?.....

School.....Grade.....Date.....

In this booklet you will find several tests of reading. They will show how fast you read, how well you understand what you read, and how many words you

know. Don't waste any time, and don't look at anyone's paper. Follow your teacher's directions. The directions for the first test are given below.

## SPEED AND ACCURACY TEST

**Directions:** Read these paragraphs. Draw a line under the word which best answers the question or completes

the sentence. Draw a line under **one** word only. Do the exercises as rapidly as you can without making errors.

**Sample:** All night long the truck driver sat at the wheel of the huge trailer truck. He drove along the twisting highways until dawn. How did he feel then?

rested      amused      tired      fresh

On the next two pages are more paragraphs similar to this sample. When your teacher tells you to turn the page, read the paragraphs and draw a line

under the word which best answers the question or completes the sentence. Be sure to do the paragraphs in order 1, 2, 3, etc., in which they are numbered.

**Do not turn the page until you are told to begin.**

**To the teacher:** Show the children the sample exercise above. Read the directions with the pupils and make sure that they know what to do. Follow this same procedure when you come to the sample exercises on pages 4 and 6.

**IMPORTANT:** Be sure to signal **STOP** at the end of the stipulated time for the Speed and Accuracy Test (6 minutes for grades 3, 4, and 5; 4 minutes for grades 6 and up). No exact time allowances are set for the other two tests. Keep your pupils working vigorously, but give them as much time as you think they need. Twenty minutes, or a little more, is usually sufficient for each test. Detailed instructions for administering and scoring the entire test are given in the Manual (included in each test package).

Speed:	Raw score.....	Grade score.....	Age score.....	Reading accuracy:
Vocabulary:	Raw score.....	Grade score.....	Age score.....	Per cent correct.....
Comprehension:	Raw score.....	Grade score.....	Age score.....	Accuracy rating.....
Averages:		Grade score.....	Age score.....	



# SPEED AND ACCURACY TEST

(Time allowance: 6 minutes for grades 3, 4, 5; 4 minutes for grade 6 and above.)

1. Betty and Sally put on their best dresses and their new shoes. They wrapped their gifts carefully in colored paper. They were going to a

fire      movie      party      playground

2. Billy sat on the window sill. Outside, the wind was blowing the snow into whirling clouds. Billy felt warm and comfortable as he watched through the

book      window      mirror      tunnel

3. Elsie and Ed sat down at a table. The waiter came over to them with a menu and asked them what they would like to eat. Where were Elsie and Ed?

restaurant      classroom      hut      movie

4. Jim walked out to the end of the pier. He fixed the line on his rod and put the bait on the hook. He threw the end of the line into the water to catch a

bird      line      fish      deer

5. In Canada, some of the people speak French, some speak English, and some speak both. How many languages are spoken in Canada?

three      two      one      four

6. Coconuts grow at the top of tall trees. Skillful climbers go up the slim trunks and throw down the fruit. What do you have to do to pick coconuts?

bend      eat      climb      hop

7. Harry put on his bathing suit. He packed his lunch. He took a towel from the shelf and put his comb in his pocket. What was Harry going to do?

swim      study      ski      read

8. Jake's dog, Bonnie, won the blue ribbon at the dog show. Photographers took pictures of Jake and Bonnie for the newspaper. How did Jake feel?

sad      ashamed      lonely      proud

9. The sun stood high in the sky. Mothers were busy, for soon the children would be coming home to have their lunch. About what time of day was it?

11:30      4:30      6:00      9:00

10. Joe ate a piece of chocolate cake. Then he ate some cookies. After that he had a few candies. What sort of food did Joe like to eat?

fruit      sweets      meat      vegetables

11. The stars are bright at night, and seem quite near. Actually, they are so far away it takes their light millions of years to reach us. Stars are

far      near      dark      new

12. Plains Indians usually lived in tents and moved about often. In the Sahara Desert, people live in the same way. The people of the Sahara live in

houses      stores      huts      tents

13. Mary was sad because she was all alone on her birthday. All at once, her friends ran in, crying, "Happy birthday, Mary!" What sort of party was this?

graduation      surprise      Christmas      Halloween

14. In 1763 the English defeated the French in a war, called the French and Indian War. Indians fought on both sides. Who won this war?

French      Americans      English      Canadians

15. Mary pulled and tugged at the knob. She was not able to turn it. It was a cold day to be locked outside. What was Mary trying to open?

box      bag      safe      door

16. Our language, which already has a million words, gains thousands more each year. The number of words in our language is at least

500      1,000      10,000      1,000,000

17. Horses that run on hard and rocky surfaces must wear horseshoes to prevent their hoofs from being hurt. What are horseshoes used for?

protection      beauty      style      warmth

18. When we take a photograph, we "write with light." That is what the word means. In taking a photograph, it is necessary to have a camera and

paintbrush      pencil      darkness      light

GO RIGHT ON TO NEXT PAGE



# SPEED AND ACCURACY TEST Continued

1. Many animals live in Australia which are found nowhere else. One of the most interesting of these is the kangaroo. Where do kangaroos live?

England      Australia      Africa      China

2. The more branches a maple tree has, the more syrup it gives. If a maple tree gave a large amount of syrup, you would guess that its branches were

small      few      weak      many

3. Clouds are made of little drops of water hanging in the air. When a cloud becomes too heavy with water, the water falls out of the cloud. Then it becomes

rain      wood      clouds      leaves

4. Without light there is no color. When a room is completely dark, colors cannot be seen. Really the colors are not there. In the dark, everything is

blue      green      colorless      pink

5. A chickadee is small and lively. It makes many short flights. It is always hopping about. It likes to hang upside down from a branch. A chickadee is a

vegetable      fish      cat      bird

6. Joe has a toothache, and it is extremely painful. He wants to get rid of the pain, and so he is going to someone who can fix his tooth. To whom will he go?

lawyer      dentist      teacher      friend

7. Switzerland has little land and few people. The Swiss people work hard, however, and their country is clean and prosperous. Switzerland is

large      small      dirty      poor

8. The sun is a star that keeps the earth warm. Without it, people could not raise food. It keeps them from freezing. What is the sun?

planet      moon      star      earth

9. An object traveling through the air at high speeds will become hot. A way must be found to keep rocket ships cool as they go swiftly through the

scientists      airplanes      water      air

28. Crabs have hard shells. The shells will not stretch, and so the crab must keep growing new shells as it gets bigger. How many shells does a crab grow?

several      one      none      two

29. A woodpecker pecks at trees with its bill and makes a loud rapping noise. It is looking for insects to eat. Where does the woodpecker find its food?

insects      trees      bill      flowers

30. The temperature in Death Valley, California, has been as high as 134°F. Most people like the temperature to be between 60° and 80°. Death Valley is

freezing      cold      hot      high

31. Scientists now believe that sunlight and starlight are alike. They think, too, that both are made in the same way. What is starlight like?

electricity      sunlight      darkness      fire

32. The Greeks believed in a sun god, Apollo. They thought the sun moving across the sky was Apollo driving his chariot. Apollo was the sun god of the

Romans      English      Greeks      French

33. Although they no longer look alike, the rhinoceros and the horse were once close relatives. What animal was once a close relative of the horse?

dog      cat      giraffe      rhinoceros

34. Before the Indians had horses, their tepees were small because they had to carry them on their backs. After they had horses, their tepees could be

larger      smaller      lighter      brighter

35. Bill ate some salty nuts. He went to the drinking fountain. When he turned it on, no water came out. The fountain was broken. How did Bill feel?

thirsty      happy      broken      tired

36. When water freezes, it takes up more room. If a crack in a rock is filled with water, and the water freezes, then it is likely that the rock will

freeze      shrink      split      spill

STOP HERE

Speed: Raw score (number correct) ..... Accuracy: Record number attempted....., then consult Manual to find accuracy score



# READING VOCABULARY TEST

**Directions:** Look at the first word in each line. Then find another word in the same line that means the same or nearly the same as the first word. Note the number of

this word and write its number in the blank space at the right. Read line A, then line B, then line C below to see the way to do it.

- |           |         |         |          |         |               |             |
|-----------|---------|---------|----------|---------|---------------|-------------|
| A. dog    | 1 cloud | 2 bird  | 3 animal | 4 dress | 5 fish .....  | A. <u>3</u> |
| B. red    | 1 man   | 2 song  | 3 tree   | 4 sit   | 5 color ..... | B. <u>5</u> |
| C. little | 1 big   | 2 small | 3 pet    | 4 book  | 5 cold .....  | C. <u>2</u> |

Now read each line on this and the next page and find the word that means the same or nearly the same as the

first word in each line. Write its number in the blank space. Do as many lines as you can.

- |               |             |            |             |            |                   |                   |
|---------------|-------------|------------|-------------|------------|-------------------|-------------------|
| 1. house      | 1 fruit     | 2 bird     | 3 harm      | 4 color    | 5 home .....      | 1. <u>      </u>  |
| 2. dinner     | 1 buy       | 2 food     | 3 tree      | 4 dark     | 5 day .....       | 2. <u>      </u>  |
| 3. hot        | 1 fight     | 2 heavy    | 3 warm      | 4 sweet    | 5 small .....     | 3. <u>      </u>  |
| 4. girl       | 1 child     | 2 cold     | 3 glass     | 4 bird     | 5 water .....     | 4. <u>      </u>  |
| 5. animal     | 1 wood      | 2 color    | 3 place     | 4 horse    | 5 tree .....      | 5. <u>      </u>  |
| 6. three      | 1 dark      | 2 tree     | 3 stone     | 4 number   | 5 wood .....      | 6. <u>      </u>  |
| 7. moving     | 1 eating    | 2 seeing   | 3 hurt      | 4 reading  | 5 going .....     | 7. <u>      </u>  |
| 8. sixteen    | 1 money     | 2 place    | 3 quiet     | 4 number   | 5 stingy .....    | 8. <u>      </u>  |
| 9. skirt      | 1 dance     | 2 game     | 3 dress     | 4 paper    | 5 hurry .....     | 9. <u>      </u>  |
| 10. carry     | 1 take      | 2 eat      | 3 hit       | 4 throw    | 5 buy .....       | 10. <u>      </u> |
| 11. howling   | 1 game      | 2 weapon   | 3 bird      | 4 simple   | 5 yelling .....   | 11. <u>      </u> |
| 12. crow      | 1 group     | 2 lift     | 3 building  | 4 place    | 5 bird .....      | 12. <u>      </u> |
| 13. overflow  | 1 catch up  | 2 run over | 3 deceive   | 4 flatter  | 5 smell .....     | 13. <u>      </u> |
| 14. daughter  | 1 color     | 2 place    | 3 darker    | 4 child    | 5 game .....      | 14. <u>      </u> |
| 15. chocolate | 1 food      | 2 tardy    | 3 crayon    | 4 metal    | 5 tool .....      | 15. <u>      </u> |
| 16. slipper   | 1 fall down | 2 toy      | 3 shoe      | 4 candy    | 5 bird .....      | 16. <u>      </u> |
| 17. champion  | 1 winner    | 2 horse    | 3 lake      | 4 bully    | 5 drink .....     | 17. <u>      </u> |
| 18. ordinary  | 1 dainty    | 2 common   | 3 cheap     | 4 shiny    | 5 deep .....      | 18. <u>      </u> |
| 19. whirl     | 1 run       | 2 spin     | 3 hurry     | 4 whine    | 5 color .....     | 19. <u>      </u> |
| 20. palace    | 1 king      | 2 beauty   | 3 animal    | 4 building | 5 drink .....     | 20. <u>      </u> |
| 21. moist     | 1 lift up   | 2 ship     | 3 animal    | 4 metal    | 5 wet .....       | 21. <u>      </u> |
| 22. attack    | 1 assault   | 2 sharpen  | 3 polish    | 4 shout    | 5 demand .....    | 22. <u>      </u> |
| 23. exhibit   | 1 fight     | 2 show     | 3 confuse   | 4 preserve | 5 shout .....     | 23. <u>      </u> |
| 24. recite    | 1 keep      | 2 cut up   | 3 report    | 4 rejoin   | 5 shine .....     | 24. <u>      </u> |
| 25. villain   | 1 woman     | 2 animal   | 3 scoundrel | 4 town     | 5 plant .....     | 25. <u>      </u> |
| 26. merciful  | 1 cruel     | 2 pretty   | 3 stuffed   | 4 stormy   | 5 kindly .....    | 26. <u>      </u> |
| 27. fantastic | 1 pretty    | 2 strange  | 3 unfair    | 4 cheap    | 5 expensive ..... | 27. <u>      </u> |
| 28. quantity  | 1 amount    | 2 can      | 3 drink     | 4 value    | 5 food .....      | 28. <u>      </u> |
| 29. lighten   | 1 lengthen  | 2 stagger  | 3 attack    | 4 confuse  | 5 reduce .....    | 29. <u>      </u> |
| 30. bleak     | 1 high      | 2 sunny    | 3 dreary    | 4 sour     | 5 hard .....      | 30. <u>      </u> |

**READING VOCABULARY TEST Continued**

<b>31. vicious</b>	1 mixed up	2 hungry	3 dripping	4 wicked	5 paint .....	<b>31.</b> _____
<b>32. previous</b>	1 wet	2 expensive	3 before	4 friendly	5 smart .....	<b>32.</b> _____
<b>33. tatter</b>	1 apron	2 book	3 smooth	4 tear	5 add up .....	<b>33.</b> _____
<b>34. readily</b>	1 smooth	2 clear	3 easily	4 slowly	5 painfully .....	<b>34.</b> _____
<b>35. mirth</b>	1 joy	2 candy	3 flower	4 anger	5 confusion .....	<b>35.</b> _____
<b>36. acquire</b>	1 crowd	2 prevent	3 sell	4 injure	5 secure .....	<b>36.</b> _____
<b>37. participate</b>	1 turn under	2 divide	3 persecute	4 join in	5 cut up .....	<b>37.</b> _____
<b>38. impudent</b>	1 unwise	2 rude	3 wasteful	4 poor	5 sickly .....	<b>38.</b> _____
<b>39. valor</b>	1 fortress	2 dough	3 courage	4 coating	5 tool .....	<b>39.</b> _____
<b>40. suspend</b>	1 hang	2 hurry	3 pretend	4 cut up	5 spring .....	<b>40.</b> _____
<b>41. condense</b>	1 divide	2 can	3 heat	4 reduce	5 criticize .....	<b>41.</b> _____
<b>42. narrative</b>	1 order	2 stairway	3 sailor	4 fisherman	5 story .....	<b>42.</b> _____
<b>43. hindrance</b>	1 falsehood	2 retreat	3 support	4 fault	5 interference .....	<b>43.</b> _____
<b>44. genial</b>	1 soft	2 friendly	3 naughty	4 burned	5 race .....	<b>44.</b> _____
<b>45. persecution</b>	1 oppression	2 cooked	3 auction	4 battle	5 fire .....	<b>45.</b> _____
<b>46. segment</b>	1 seed	2 part	3 combination	4 rudder	5 guess .....	<b>46.</b> _____
<b>47. incredulous</b>	1 unbelieving	2 fearless	3 dependable	4 sickly	5 gullible .....	<b>47.</b> _____
<b>48. populace</b>	1 publish	2 medicine	3 coat	4 people	5 statement .....	<b>48.</b> _____
<b>49. vagrant</b>	1 worm	2 tool	3 tramp	4 direction	5 soldier .....	<b>49.</b> _____
<b>50. rigidity</b>	1 coldness	2 stiffness	3 strange	4 hunger	5 availability .....	<b>50.</b> _____
<b>51. opportune</b>	1 cheap	2 expensive	3 timely	4 faulty	5 crafty .....	<b>51.</b> _____
<b>52. acute</b>	1 sharp	2 funny	3 idiotic	4 fearful	5 horrible .....	<b>52.</b> _____
<b>53. adjacent</b>	1 under	2 next to	3 double	4 fearful	5 cowardly .....	<b>53.</b> _____
<b>54. innumerable</b>	1 durable	2 lasting	3 colored	4 unknown	5 many .....	<b>54.</b> _____
<b>55. myriad</b>	1 hive	2 jewel	3 chain	4 scattered	5 many .....	<b>55.</b> _____
<b>56. complacent</b>	1 contented	2 contrary	3 pretty	4 generous	5 expensive .....	<b>56.</b> _____
<b>57. contemptible</b>	1 brilliant	2 argumentative	3 honest	4 haughty	5 disgraceful.....	<b>57.</b> _____
<b>58. admonish</b>	1 strangle	2 mix	3 punish	4 advise	5 praise .....	<b>58.</b> _____
<b>59. suppress</b>	1 print	2 stop	3 criticize	4 supply	5 make up .....	<b>59.</b> _____
<b>60. circuitous</b>	1 indirect	2 affluent	3 plentiful	4 stingy	5 amazing .....	<b>60.</b> _____
<b>61. paternal</b>	1 foreign	2 dull	3 secretive	4 fatherly	5 boastful .....	<b>61.</b> _____
<b>62. obscene</b>	1 scenic	2 foul	3 rural	4 clean	5 subtle .....	<b>62.</b> _____
<b>63. pilfer</b>	1 strain	2 invent	3 poison	4 steal	5 retreat .....	<b>63.</b> _____
<b>64. bulwark</b>	1 post	2 challenge	3 defense	4 achievement	5 gun .....	<b>64.</b> _____
<b>65. fallacious</b>	1 dangerous	2 explosive	3 fearless	4 faulty	5 fashionable .....	<b>65.</b> _____

**STOP HERE**

**Number correct (possible 65)..... Number wrong..... Raw score (number correct minus ¼ number wrong).....**



# LEVEL OF COMPREHENSION TEST

**Directions:** Read each paragraph. Note the space marked A. Note the line of words marked A. Find the word in line A that makes the best sense in space A and draw a line under it. Do the same for the

space marked B, and for C when there is a C. The sample is marked correctly. If you cannot do one of the paragraphs, do not spend too much time on it. Go on to the next item.

**Sample:** My cat is now very old. After it has had dinner it likes to find a soft, warm A and go to B.

A. glass	cold	<u>bed</u>	lake	pig
B. town	<u>sleep</u>	five	swim	pieces

1. We have a playroom in our A. It is down in the basement, so we need an electric B even on sunny days.

A. tent	house	bed	car	lake
B. storm	friend	light	ladder	engine

2. My little brother has a big box of play blocks. I help him A towers and bridges, but he likes to B them all down.

A. burn	build	sing	shoot	sleep
B. eat	cry	swim	knock	sell

3. Bob's father took him for a ride in an airplane. It rolled across the airfield and soon it was in the air. It climbed higher and higher. From high up in the A, the houses far below B tiny.

A. sky	water	airfield	pilot	ocean
B. looked	smelled	flew	walked	felt

4. Our bread is made from wheat that comes mostly from the central part of the United States. In this part of our country there are many large A with huge fields of B and other grains.

A. balloons	boats	farms	engines	river
B. wheat	apples	pears	lettuce	fish

5. Electric-eye doors are useful in such places as railway stations and stores. In these places, people are likely to be carrying A and therefore do not have their B free to open doors.

A. woes	packages	radiators	doors	trains
B. feet	nose	spirits	hands	energy

6. When Bert was eight years old, his parents gave him a pony. First he learned to ride. Then he taught the pony to A a little B.

A. push	pull	ride	laugh	fly
B. fence	sandwich	wagon	automobile	saddle

GO RIGHT ON TO NEXT PAGE

Today most homes stay in one place, and food kept in the refrigerator. Once, however, food was on the hoof and had to be followed. Hunters and their families \_\_\_\_\_ A \_\_\_\_\_ after the \_\_\_\_\_ B \_\_\_\_\_ and carried their houses with them.

- A. flew wished followed stroked swam  
B. stores meteors refrigerator animals medicine men

Plastic is a relatively new material. It has become of major importance in a short time. Strength and flexibility are the two outstanding qualities which make it \_\_\_\_\_ A \_\_\_\_\_ for many different \_\_\_\_\_ B \_\_\_\_\_.

- A. attractive edited useful manageable frightful  
B. schools instances grounds boys purposes

Alexander Graham Bell was a teacher of the deaf. Because of his work with people who lived in a \_\_\_\_\_ A \_\_\_\_\_ world, he became interested in the problems of sound. Our telephone is a \_\_\_\_\_ B \_\_\_\_\_ of this interest.

- A. noisy brilliant soundless static changeless  
B. fault charge forerunner teacher result

On mountaintops, liquids boil at lower temperatures because of diminished air pressure. Spacemen must wear pressurized suits where there is little \_\_\_\_\_ A \_\_\_\_\_ in order to keep their blood from \_\_\_\_\_ B \_\_\_\_\_.

- A. water food soda air liquid  
B. disappearing boiling fading leaping stuffing

11. A new problem confronts the landscape gardener. He must consider his art as seen from the air. With \_\_\_\_\_ A \_\_\_\_\_ travel steadily increasing, a community must give more and more attention to its appearance from the \_\_\_\_\_ B \_\_\_\_\_.

- A. automobile underground sea train airplane  
B. clouds highway ocean tunnel station

12. Iron ore is first melted into pig iron. From this pig iron all other types of iron and steel are made. As pig iron is hard and brittle, it can be used only for \_\_\_\_\_ A \_\_\_\_\_ articles that do not receive much \_\_\_\_\_ B \_\_\_\_\_. It breaks easily.

- A. finding throwing breaking making cleaning  
B. pressure cleaning attention light heat

13. It is economically sound to control water. Too much water means the destruction of life and property by flood. Too little water often brings the same results by drought. When water is controlled, it is available for \_\_\_\_\_ A \_\_\_\_\_ and for \_\_\_\_\_ B \_\_\_\_\_.

- A. irrigation waste destruction music problems  
B. drowning floods scenery housing power

14. Ceremony plays its part in every society. It provides the greeting, "Good Morning," with which we acknowledge an event as minor as the \_\_\_\_\_ A \_\_\_\_\_ of a new day. It establishes the form in which we observe major events such as \_\_\_\_\_ B \_\_\_\_\_ or death.

- A. passing end memory decline coming  
B. head colds quarrels marriage picnics parties

TURN THE PAGE AND GO RIGHT ON



15. Of the several kinds of birds that once were common in the United States but are now \_\_\_\_\_A\_\_\_\_\_, the Passenger Pigeon is perhaps the most famous. There were once so many that their millions \_\_\_\_\_B\_\_\_\_\_the sky.

- A. extinct prevalent numerous unpopular huge  
B. replaced swallowed conquered darkened refused

16. The regulation double-hung window in which each sash slides past the other, the outer one on top, was invented by, or at the time of, Thomas Jefferson. It is said he was annoyed at the way casement windows tangled with the draperies. Since then, \_\_\_\_\_A\_\_\_\_\_windows have become\_\_\_\_\_B\_\_\_\_\_in many parts of the country.

- A. bay casement picture double-hung screen  
B. doors standard blinds bigger weaker

17. With great reluctance man surrendered his belief in the earth as the center of the universe. To accept the idea that the earth is merely one of nine planets \_\_\_\_\_A\_\_\_\_\_a dying star seemed to\_\_\_\_\_B\_\_\_\_\_man's importance.

- A. fighting cheating lighting escaping circling  
B. distill prove diminish choose increase

18. A space station would be the earth's second satellite, but its first of the man-made variety. The moon is our first satellite, and a space station would behave according to the same\_\_\_\_\_A\_\_\_\_\_laws that \_\_\_\_\_B\_\_\_\_\_the moon.

- A. natural tyrant's man-made legislated popular  
B. trouble persuade created nourish govern

19. Since any object consumes its own mass as it gives off energy, the sun will eventually become an \_\_\_\_\_A\_\_\_\_\_cinder at the center of our\_\_\_\_\_B\_\_\_\_\_solar system.

- A. altruistic elated effervescent exhausted ebullient  
B. mundane livid frigid ergot frenetic

20. "No matter if the facts be physical or moral they all have their causes . . . Vice and virtue are products, like vitriol and sugar; and every\_\_\_\_\_A\_\_\_\_\_phenomenon arises from other more simple\_\_\_\_\_B\_\_\_\_\_on which it hangs."

- A. ghastly eccentric raucous complex imaginary  
B. trivia phenomena counsels prodigality annulment

21. A part of a man can govern and otherwise \_\_\_\_\_A\_\_\_\_\_other parts of him. Supernatural and abstract\_\_\_\_\_B\_\_\_\_\_operate on man by habits and ideals instilled in him, especially in early life. It is only as notions of God, duty, etc., take up their abode in men that they become political\_\_\_\_\_C\_\_\_\_\_

- A. stop injure influence abhor tolerate  
B. animals men money lights entities  
C. traders forces devils seances vapors

STOP HERE

Number correct (possible 43)..... Number wrong..... Raw score (number correct minus ¼ number wrong).....



EDMONTON SEPARATE SCHOOLS  
NORMS FOR GATES SURVEY (SEPT.1963)

<u>Form I      Grade V</u>					<u>Form II      Grade VI</u>				
<u>Per-</u> <u>centile</u>	<u>Speed</u>	<u>Vocabu-</u> <u>lary</u>	<u>Compre-</u> <u>hension</u>	<u>Aver-</u> <u>age</u>	<u>Speed</u>	<u>Vocabu-</u> <u>lary</u>	<u>Compre-</u> <u>hension</u>	<u>Aver-</u> <u>age</u>	
98	7.9	9.4	8.9	8.2	11.8	10.7	10.2	10.1	
95	7.6	8.3	7.9	7.5	11.3	9.9	9.5	8.9	
90	7.2	7.5	7.5	7.1	10.2	8.7	8.6	8.5	
80	6.6	6.6	6.8	6.6	8.6	8.0	7.7	7.9	
75	6.2	6.3	6.4	6.3	8.0	7.7	7.4	7.7	
70	6.1	6.1	6.0	6.0	7.7	7.5	7.2	7.5	
60	5.6	5.7	5.7	5.6	7.3	6.9	6.8	7.1	
50	5.0	5.4	5.3	5.3	6.8	6.5	6.3	6.7	
40	4.6	5.1	5.0	4.9	6.5	6.1	5.8	6.3	
30	4.3	4.8	4.7	4.6	6.3	5.7	5.4	5.9	
25	4.1	4.5	4.4	4.4	6.1	5.5	5.3	5.7	
20	3.9	4.4	4.2	4.2	5.9	5.3	5.1	5.5	
15	3.7	4.2	4.0	4.0	5.6	5.1	4.9	5.3	
10	3.4	4.0	3.5	3.8	5.1	4.9	4.5	5.1	
5	3.0	3.2	3.0	3.3	5.0	4.3	4.0	4.7	
Mean	5.2	5.5	5.5	5.4	7.2	6.7	6.5	6.8	

NORMS FOR GATES SURVEY (SEPT. 1964)

<u>Form I      Grade V</u>					<u>Form II      Grade VI</u>				
<u>Per-</u> <u>centile</u>	<u>Speed</u>	<u>Vocabu-</u> <u>lary</u>	<u>Compre-</u> <u>hension</u>	<u>Aver-</u> <u>age</u>	<u>Speed</u>	<u>Vocabu-</u> <u>lary</u>	<u>Compre-</u> <u>hension</u>	<u>Aver-</u> <u>age</u>	
98	8.5	8.7	9.1	8.3	11.5	10.7	10.2	9.8	
95	7.8	7.9	8.4	7.7	10.9	10.2	9.5	9.3	
90	7.4	7.4	7.7	7.2	9.3	8.9	8.7	8.6	
80	6.7	6.6	7.0	6.6	7.9	8.1	7.7	7.7	
75	6.5	6.4	6.8	6.5	7.7	7.8	7.5	7.5	
70	6.4	6.2	6.5	6.2	7.5	7.6	7.2	7.3	
60	6.0	5.8	5.9	5.8	7.0	7.0	6.7	6.9	
50	5.5	5.5	5.6	5.6	6.6	6.7	6.0	6.6	
40	5.0	5.2	5.4	5.3	6.3	6.1	5.7	6.2	
30	4.6	4.9	5.1	4.9	6.1	5.7	5.4	5.8	
25	4.3	4.7	4.9	4.7	6.0	5.5	5.2	5.6	
20	4.1	4.5	4.6	4.5	5.8	5.3	5.1	5.4	
15	3.9	4.3	4.3	4.2	5.4	5.1	4.9	5.2	
10	3.5	4.0	4.0	4.0	5.0	4.8	4.6	5.0	
5	3.1	3.5	3.3	3.5	4.4	4.2	4.1	4.5	
Mean	5.4	5.6	5.7	5.5	Mean	7.2	6.7	6.4	6.8















**B29834**